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ANNALS  
—OF—  
OPHTHALMOLOGY  
—AND—  
OTOLOGY.

VOL. V.

JANUARY, 1896.

No. 1.

MIXED FORMS OF TRACHOMA AND SPRING  
CATARRH.

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OUR knowledge of the disease of the eye known as  
"spring catarrh," ("vernal catarrh," "circum-cor-  
neal hypertrophy") is limited to symptomatology; we  
know little or nothing concerning etiology or effective  
treatment. The disease has been described as occurring in  
three forms: (1) The most frequent, in which both the  
hypertrophy at the limbus and the papillary changes  
(granulations) of the palpebral portion of the conjunctiva  
exist; (2) in which only the circum-corneal hypertrophy is  
present; and (3) in which the ocular conjunctiva remains  
normal, but the palpebral presents flat granulations.

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The disease is most frequently confounded with trachoma, especially when the diagnosis is first made in winter. The clinical history of exacerbation during the summer is always an important factor in this connection; and by many, this recurrence of the subjective symptoms with the advent of warm weather, and freedom during winter, is regarded as pathognomonic.

It should be remembered, however, that even though the subjective symptoms disappear with cool or cold weather, the objective signs persist to a greater or lesser degree in almost every case. The circum-corneal hypertrophy becomes smaller, the ocular conjunctiva loses its injection and the granulations of the palpebral conjunctiva become less prominent; but close observation will show that none of these objective signs disappears completely in winter; at no time does either the surface of the eyeball or the inner aspect of the lids present a perfectly normal appearance. In some cases there is sufficient change in the palpebral conjunctiva persisting during the winter to warrant the suspicion of trachoma, and in the absence of the clinical history, and when the hypertrophied nodules at the limbus shrink to insignificant dimensions, such a diagnosis would probably be made.

The writer's experience has led him to believe that trachoma and spring catarrh may be present at the same time. He has collected a number of cases which seem to show conclusively that such mixed forms do exist. The following six cases illustrate this most characteristically:

*Case I.* C. W., female, 14 years of age. December, 1887. Has had itching, smarting and watering for past two years; this becomes pronounced in warm weather and disappears almost completely in winter. At present does not complain of symptoms referable to the lids, but seeks relief from asthenopia. Examination showed hyperopia 1.00 D., and these glasses were prescribed. At this time the lids presented the ordinary appearance of trachoma, and, although there were traces of circum-corneal hypertrophy, these were insignificant. The case was entered in the writer's record-book as one of trachoma. The lids

were treated with blue-stone applied three times a week, and this was continued until the middle of March, 1888, then treatment was discontinued, no granulations existing, and the ointment of the yellow oxid of mercury was prescribed.

The patient was seen again in June, 1888, and presented a perfect picture of spring catarrh, but although the symptoms seemed quite aggravated the patient stated that they were much less marked than they had been during the two preceding summers. No local treatment was ordered except solution of boric acid.

December, 1888. She called to have her glasses changed. Ordered + 1.75 D. Sph. Examination showed the bulbar conjunctiva to be practically normal; the lids, however, presented a similar condition to that existing the previous winter. The mother had been so much impressed with the improvement during the past summer which she attributed to the copper treatment that, at her request, the writer continued these applications for three months.

The case was seen from time to time during the summer of 1889; the circum-corneal hypertrophy was marked but there was much less injection than during the previous summer, and the granulations were very much smaller; her symptoms were not pronounced.

During the winter of 1890 everything had disappeared except a few small granulations; blue-stone was applied for a month. The case was not seen during the summer of 1891, but in the fall the mother reported that the girl had practically been free from any symptoms whatever. Close questioning, however, brought out that there had been some slight annoyance during not more than half a dozen very oppressive days.

January, 1892. Beyond a slight conjunctivitis, the eyes presented nothing abnormal. All trace of the case was lost after this date.

*Case II.* I. S., male, 19 years of age. March, 1889. History of itching, smarting, photophobia and lachrymation off and on for the past two years. These are worse in summer and less marked, but do not disappear in winter. The immediate cause of the patient's visit was a foreign body upon the cornea. Examination showed chronic trachoma of both eyes with a commencing pannus of the right cornea. The patient was treated

with blue-stone for two months; then finding that he was unable to call regularly, he was given a gr. ss. to one ounce solution of silver which he was to apply three times a week. He was not seen again until July 8th, when he presented every symptom of spring catarrh, including well-marked circum-corneal hypertrophy; his lids were about in the same condition as when he had discontinued the copper treatment; there was only a trace of pannus.

When next examined, August, 1890, he had the symptoms of spring catarrh, but in a less marked form as compared to the previous summer, and his objective signs were decidedly less pronounced. He had been treated at one of the eye dispensaries for trachoma during the previous winter, and blue-stone had been applied every other day. He had no pannus.

The patient changed his residence after this and was not seen until February, 1895. There were no evidences of spring catarrh, but merely a picture of chronic trachoma, the conjunctiva of the lids being velvety with slight cicatricial changes here and there; he had very little inconvenience from the condition of the lids and reported that during the previous two summers there had been no exacerbations in symptoms, and that as far as he could see, his eyeballs presented the same appearance as in winter.

*Case III.* M. G., male, 19 years of age. May, 1891. Has had granulations since childhood; and been treated off and on with blue-stone by two different specialists. His lids presented the ordinary appearances of chronic trachoma with slight cicatricial changes; the upper portion of each cornea showed a crescentic area of pannus; at the limbus at each side of the cornea there was a well-marked hypertrophied area; there was a great deal of congestion of the ocular conjunctiva. Upon questioning, he said that his symptoms were always worse during summer, but this he attributed to the fact that he spent his summers at the seashore and ascribed the exacerbation to the "glare from the sun and the salt in the air." The picture was an unmistakable one of a combination of trachoma and spring catarrh. The blue-stone treatment was employed during the entire summer and the following winter with constant improvement; as soon as the cold weather set in the injection of the ocular conjunctiva and the circum-corneal hypertrophy disappeared, but the condition of the lids changed very slowly.

The writer has seen this case several times a year ever since. He has all the signs of chronic trachoma during the winter, and in summer those of spring catarrh are added; both objective and subjective symptoms have become less marked with each successive summer. During the past summer he complained very little.

*Case IV.* W. M., male, 7 years of age. April, 1892. Complained of congestion of eyeballs, of watering, of smarting and itching sensations of lids during the previous summer; these symptoms disappeared during the winter; now they are beginning to be felt again. Has been treated for trachoma with blue-stone during the past winter by another oculist. His symptoms are now less severe than they were during the same period of the previous year. Examination showed a trachoma-like condition of the lids; no pannus; considerable ocular congestion and moderate circum-corneal hypertrophy. The case was regarded as a mixed one of trachoma and spring catarrh, and treated with blue-stone until he left for the country in June. In the fall he reported that, though his subjective symptoms had been annoying, they had been much less marked than the previous summer. In the winter the eyeballs had an almost normal appearance, but the granulations remained of the same size; he complained some of a feeling of sand beneath the lids, and the latter were treated with copper for six weeks.

He has had no treatment since then (February, 1893,) and each summer his symptoms have been decidedly less marked than the summer before. Examination of his lids in March, 1895, showed nothing beyond slight evidences of trachoma here and there. During the past summer he gave no evidences of spring catarrh, and he did not complain of any symptoms referable to the eye.

*Case V.* H. W., male, 10 years of age. June, 1893. For the past three years complains of watering, heavy feeling, burning and itching; all these symptoms are worse during warm weather, and subside almost completely during winter. During the present summer (1893) his symptoms have been worse than ever. There is a great deal of congestion of the conjunctiva of the globe and considerable hypertrophy at the limbus. Granulations of the palpebral conjunctiva of both eyes are of very large size.

The granulations were expressed with Knapp's roller forceps (under ether), and during the balance of the summer the symptoms were very much less marked, the lids remaining free from granulations, but the congestion of the ocular conjunctiva and the circum-corneal hypertrophy remaining about the same.

The following summer (1894) the symptoms returned, but both objective and subjective manifestations were much less pronounced. The granulations had reappeared and the roller forceps was employed a second time. The balance of the summer was spent in comparative comfort.

July, 1895. The boy reported that he suffered no annoyance whatever; there were no granulations, but there was a little circum-corneal hypertrophy and some congestion of the ocular conjunctiva.

*Case VI.* E. C., female, 8 years of age. July, 1895. During the past three years patient has complained of itching, burning sensation and watering, and eyes have been "blood-shot." These symptoms occur only during the summer, and disappear with cooler weather. Examination showed both upper and lower lids covered with papillary granulations; there was circum-corneal hypertrophy at the inner and outer part of the limbus of both eyes, more marked externally; the upper part of the right cornea presented a narrow crescent of pannus. The patient was treated with blue-stone three times a week for three months. At the end of this time the pannus had disappeared almost completely. During the continuance of the treatment, even during the hot weather the symptoms, both objective and subjective, showed slow but steady improvement.

These six cases have proven to the writer that there are *mixed forms of trachoma and spring catarrh*, cases which probably are originally trachoma, and suffer from the additional signs and symptoms of spring catarrh during the warm weather. This conclusion is based upon a study of the course of the cases and strengthened by the existence of pannus in some, and by the fact that marked improvement followed the use of blue-stone or the operation of expression in all. We know that in simple cases of spring catarrh such treatment has no effect upon the tedious progress of the disease and even aggravates the symptoms

when used during the exacerbation. Such cases are not amenable to any form of treatment known to us, and persist for many years despite every means at our command.

In every one of the cases reported, on the contrary, the use of blue-stone appears to have had a very favorable effect upon the course of the disease; such a result also followed the employment of the roller forceps. Such achievements can only be attributed to the association with trachoma. In the October, 1895 number of the *Archives of Ophthalmology*, Gradle reports having used expression in two cases of the palpebral form of spring catarrh with temporarily good results.

Spring catarrh has the same relation to the eye which rose cold and hay fever have to the nose. Just as the latter affections may occur in cases in which the nasal mucous membrane is normal, and also in cases in which this membrane is pathologically changed, so the analogous ocular disease may implant itself upon a normal or a trachomatous conjunctiva.

The writer has been treating some cases of simple spring catarrh by means of the constitutional treatment recommended by Bishop in hay fever (preliminary treatment with salicylate of sodium, treatment during the attack with dilute sulphuric acid). This treatment was used in too small a number of cases, and was begun too late during the past summer to warrant any definite conclusions at the present time; but the results during this limited period were sufficiently favorable to justify further trial.

#### Conclusions:

1. There exists a mixed form of trachoma and spring catarrh in which the symptoms of the latter are added during the prevalence of warm weather.
2. The existence of the slightest evidence of pannus or of cicatricial changes in the lids strengthens this diagnosis.
3. The use of the treatment for trachoma (blue-stone or expression) exerts not only a good effect upon the trachoma, but also modifies the course of the spring catarrh in a decidedly favorable manner.

4. When such an association of these two diseases is suspected, the treatment of trachoma should be instituted since we are not at the present time aware of any method which will shorten the lengthy duration of spring catarrh.

5. It seems probable that constitutional treatment on the lines now adopted in hay fever will be productive of more success than we have hitherto had with the local treatment of ordinary cases of spring catarrh.

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## ON THE PREPARATION OF MACROSCOPICAL EYE SPECIMENS.<sup>1</sup>

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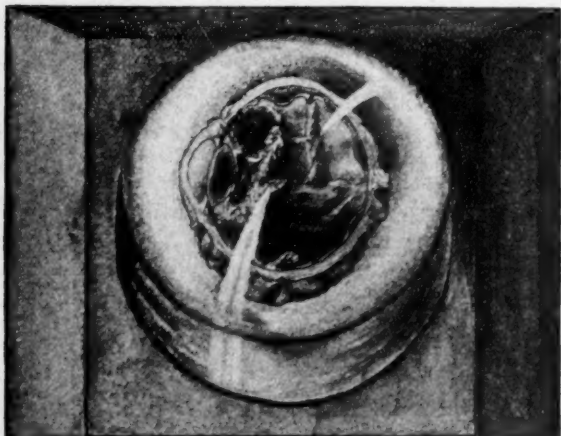
IT is my wish to exhibit to you this evening a series of macroscopical specimens of eyes which I have prepared during the past winter in the laboratory of the State Hospital for the Insane at Norristown. I do this with a certain reluctance as I fear that most of you will find but little pleasure in listening to a description of a group of diseases which are perhaps unknown to you as general pathologists, but I trust that the beauty of the specimens may repay you for viewing them. The method of preparing them was taught me by Mr. Treacher Collins, of London, curator of the museum in the Moorfields Eye Hospital, and is practically the same as that which was introduced by Mr. Priestley Smith some years ago.

The glass jars which I employ have been made for me by the Fox Optical Co., and may be obtained at a reasonable rate. They consist, as you see, of a simple glass jar which is capped with a plano-convex lens. This small disc of opaque glass is used to seal the jar, and forms an excellent background for the specimen. A convenient receptacle for the lens is offered by this block of wood.

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<sup>1</sup> Read before the Philadelphia Pathological Society.

The preparation of the eye for mounting is briefly as follows: The entire globe is hardened in Muller's fluid for at least three weeks. It is then placed in a freezing mixture of salt and ice, care being taken to envelop the eye in oiled silk to prevent any of the fluid from the freezing mixture coming in contact with it. After the globe is thoroughly hardened, it is divided by a bold stroke of a knife, that form of knife used in sectioning the brain being the best adapted for this purpose. One-half of the eye is reserved for microscopic examination, whilst that which is to be mounted macroscopically is placed in water to thaw



*Sketch of finished macroscopic specimen, mounted in gelatine, with jar capped with a plano-convex lens, and fitted into a wood block.*

out and to rid it of the excess of Muller's fluid. To remove the stain caused by the fluid more effectually, the section of eye is then placed in a 5% solution of chloral hydrate, care being taken to change the solution daily until the section is no longer discolored. As the globe would shrink were it placed in the mounting fluid at this stage, it is first subjected to solutions of glycerin and water of different strengths. The eye is then ready for mounting.

The preparation of the medium used for this purpose is the only difficult stage in the entire process. It is quite a painstaking task to obtain a clear solution, and one frequently consumes three or four hours in the process to be rewarded by a product which is too cloudy for use. The solution is best prepared as follows: One ounce (about twelve to fourteen strips) of the best French gelatin (Coignet & Co., Paris,) is cut into small bits by a pair of scissors, eight ounces of water is then added to the gelatin, and the mass set aside in a beaker to swell. The whites of two eggs are then taken, and to better clear the mixture later on, the shells of the eggs are cut into fine pieces and thoroughly mixed with the albumen. The gelatin is now melted with a gentle heat, a few drops of carbolic acid being added as an antiseptic. As soon as it begins to boil the albumen is added, and the whole mass stirred with a glass rod. As the mixture is very readily scorched, constant attention must be given it until the fluid is quite clear below and a thick scum has gathered upon the top. The mixture is now filtered through flannel, or preferably through a steam filter, and the product which should be quite clear is collected in a jar which has been made perfectly clean. Eight ounces of glycerin is then added. After the glycerin and jelly have been thoroughly mixed, one of the glass cells is two-thirds filled with the solution, and the section of eye floated upon it. The globe is then seized at the equator with a pair of forceps and gently rolled over in such a way that no air bubbles are permitted to get into its concavity. Should any bubbles, however, get in, they can be readily removed by sucking them out through a glass tube. A hand-mirror is now placed under the specimen and a good view is obtained of the position of the eye, and of any air bubbles which may have escaped detection from above. The globe is then kept from rising in the fluid by placing over it a bit of card-board, perforated by a pin.

The jar should never be entirely filled with the solution, for it is always better to leave an air space between it and the opaque disc which is cemented on after the jelly has thoroughly set.

I will hand around these specimens that you may the more readily study them. You will see the globe somewhat magnified, the effect of the plano-convex lens.

*Specimen 1.* Normal eye. This eye was removed from an inmate of the Norristown hospital shortly after death, and shows very beautifully the structure of the normal eye. The relative thickness of the sclerotic and cornea, and the typographical relation of the anterior and posterior chambers of the eye can be readily studied. The optic nerve has been cut directly in half so that the physiological excavation in its head is plainly visible. The retinal vessels are also seen coursing over that delicate sheet and its pigment layer can be well seen as it continues forward to form the posterior layer of the iris.

*Specimen 2.* Hemorrhage into the ciliary body. This eye was presented to me by Mr. Collins. It was enucleated in the Moorfields clinic on account of pain. It shows very beautifully a hemorrhage that has been localized in the ciliary body. The angles of the anterior chamber are patulous, and the optic nerve-head is not excavated, showing that if a glaucomatous state had necessitated the removal of the eye, the increase in intra-ocular tension could not have been of long standing. The vitreous appears shrunken and has contracted into a flocculent mass directly posterior to the lens. The numerous rucks in the retina are of post-mortem origin. This specimen has been in my possession four years and exemplifies very well the durability of this method of mounting, for the jelly is just as clear and as firm as the day upon which it was poured into the cell.

*Specimen 3.* Chronic glaucoma. This eye was given me for mounting by Dr. Risley, and exhibits in a very striking manner the essential pathological features of that disease. In the first place, the globe is seen to be rather short, and was probably a hypermetropic eye. Again the lens seems to be relatively large, and the space between the

margin of the lens and ciliary body appears to the naked eye to be very much compromised. The angles of the anterior chamber are completely blocked, the pupil is widely dilated. The optic nerve-head is cupped and in quite a different manner from that in the normal eye, for if you will look closely you will see that the excavation comprises the entire head of the nerve, whereas, in the normal eye the cup was confined to its central portion, about the entrance of the retinal vessels.

*Specimen 4.* Myopia and anterior polar cataract. This eye was enucleated by Dr. Zimmerman. I show you this specimen next that you may contrast it with the preceding, for one is at once struck with the difference in length of the two eyes. I should think from the length of this globe that there must have been a myopia of over 20 D. You will also observe that the eye gives the impression of overstretching. Its walls are much thinned, the sclerotic being very thin in places, and in the posterior pole of the eye there are large whitish looking areas which indicate patches of choroidal absorption, the sclerotic being visible in the bottom of the area. As often happens in these cases, the vitreous is much shrunken and the retina is seen to be detached below. If you will look at the cornea you will find it to be opaque in its central portion. This opacity is directly continuous with a whitish mass which is in intimate association with the anterior capsule of the lens. There has been a primary ulcer of the cornea in this eye which has so thinned that membrane that it has given way to the intra-ocular tension and has perforated. The lens has been pushed forward at the time of the escape of the aqueous humor and as a consequence of the impaired nutrition to which the cells lining the anterior capsule were subjected, this prominence, or what is known as anterior polar cataract, has formed.

The three other eyes which I will now exhibit, were enucleated in our clinic at Wills Eye Hospital by my chief, Dr. Oliver.

*Specimen 5.* Intra-ocular growth. This is a most unusual specimen, representing very beautifully a neoplasm of the anterior segment of the eye. The case is now being carefully studied, and will be reported in full elsewhere. I may state however that the patient was referred from the country for enucleation with a diagnosis of irido-cyclitis, although there had been some evidence of intra-ocular growth. Upon viewing this specimen one is instantly struck by the contrast in color which is presented by the different parts of the eye. This brownish-red mass, I take to be the neoplasm, whilst the yellowish mass which appears to fill in the interstices is probably purulent. A similar case was reported in Graefe's *Archives for Ophthalmology* last year, and throws considerable light upon the one under discussion. I am inclined myself from the microscopical examination to consider the growth to be gliomatous in nature, as it consists of cells which are distinctly neuroglial in type.

*Specimen 6.* Irido-cyclitis. This eye was enucleated on account of pain. This symptom was occasioned by the development of secondary glaucoma as a consequence of a stasis in the intra-ocular circulation caused by a blocking up of the anterior chamber. The fluid in the posterior chamber had driven the iris forward to such an extent that the membrane was in contact with the cornea. The iris being bound down to the lens at its pupillary edge by firm adhesions, and being attached to the ciliary body peripherally, has an arched appearance, and deserves the appellation of *iris bombe*. The vitreous humor has shrunk, and in its place broad bands of connective tissue are seen which traverse that humor. The lens is encapsulated in a mass of newly-formed inflammatory material. By throwing the light into the deeper portion of the specimen by means of this strong convex lens which I hold in my hand, one is able to see very beautifully a number of fine filamentous processes which are given off from the large masses of connective tissue. The retina is completely detached upon

one side, probably as a result of the contraction of these bands. A large hemorrhage is seen to the nasal side of the eye occupying the internal retinal layers.

*Specimen 7.* Perforating wound of eye. This last specimen shows very well a frequent result of this class of injuries. A bit of steel had perforated the cornea and the lens of this eye, and had been successfully removed; notwithstanding this, however, symptoms of sympathetic inflammation supervened in the other eye, and the offending and exciting eye was removed. The configuration of the eye appears perfect. There is a broad band of newly-formed tissue which stretches across between the two chambers of the eye. This is composed of lenticular debris, newly-formed capsular and connective tissue, and the iris which is glued into the mass. I have examined the optic nerve of this eye microscopically, but find no evidence of inflammatory change in it which is additional evidence that the disease does not always affect the sympathizing eye by an inflammation which is propagated along that nerve.

# THE REMOVAL OF FOREIGN BODIES OF IRON OR STEEL FROM THE INTERIOR OF THE EYE- BALL WITH THE GALVANO-MAGNET.

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THE danger of the presence of foreign bodies in the interior of the eyeball is very great. Cases in which the body becomes encapsulated and innocuous are rare; in the great majority a destructive inflammation follows, which often results in loss of vision of even the uninjured eye by sympathetic ophthalmia.

The inflammation of the eyeball into which the foreign body has entered may be due to pathogenic organisms which were carried in with it or by its own chemical properties.

In the latter case, the extraction of the foreign body will alleviate all danger,<sup>1</sup> but even in the former it is probable that the early removal will often have a similar happy result.

In a large number of cases the foreign body is iron or steel. This may be removed with the magnet. The simple magnet is rarely of sufficient power to be of service; the galvano-magnets that have been used are essentially of two kinds; first, a small instrument invented by Hirschberg, the tip of which is inserted into the eyeball through an incision; second, large galvano-magnets, such as may

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<sup>1</sup>See Leber, *Entstehung der Entzündung*, Leipzig, 1891, p. 272.

be found in physical laboratories. The former are comparatively strong, and have the great advantage of being light and easily handled, the latter are of intense power, but owing to their great size and weight are fixed. These have only recently been used in a few of the largest clinics of Europe;<sup>2</sup> when placed in proximity to the eye, but not introduced within it, they may draw a hidden chip out of the eyeball or into such a position that the smaller magnet can reach it.

A controversy<sup>3</sup> has recently been waging as to the relative value of these instruments; the smaller instrument, which every oculist can possess and can easily use, alone concerns us. It was Hirschberg's galvano-magnet that was used in the cases described below.

The operations, which will be very briefly described, are not unique, still it is hoped that they are sufficiently interesting to merit a report.

*CASE I. Removal of a chip of steel imbedded in the iris and capsule of the lens.*

Mr. C., 25 years of age, was injured while working on a piece of steel; a chip struck the eye, and he came to have it removed, thinking it lay upon the cornea. I saw the patient at 10 p. m., August 6, 1893, the day of the injury, and found that a small foreign body, evidently a chip of steel, had penetrated the anterior chamber and was lodged in the iris of the right eye. The corneal wound was represented by a fine line. The lens already showed a peripheral opacity; cocain and atropia were instilled.

On the following morning the partial cataract was easily discernible; the iris had dilated, excepting at the point where the foreign body was lodged and where it seemed to pin the iris to the lens.

Operation August 7, under chloroform. An incision was made at the inner margin of the cornea with a keratome, and the point of the magnet was introduced through it. It did not dislodge the chip immediately, but in a few moments it drew it out, together with a little iris in which it was imbedded and hidden. The por-

<sup>2</sup> Haab, Schloesser, Deutschmann.

<sup>3</sup> *Deutsche Med. Wochenschrift*, 1894, pp. 393, 494, 530, 592.

tion of the iris containing the chip was therefore excised, the rest replaced; a small secondary pupil is the result. The chip measured 1 mm.  $\times$  2 mm. and was very thin. Its weight was  $\frac{1}{25}$  gr.

Atropia was instilled for some time and vision improved, being  $\frac{6}{18}$  for about one month. For a long time the cataract made no progress. In May, 1894, the patient suffered with typhoid fever, and since his convalescence the cataract made rapid strides; when examined in June, 1895, it was almost complete. This observation is interesting in view of the fact that several cases have been published in which cataract has developed in youthful individuals after an attack of typhoid.

In this case there is at present little vision, the removal of the cataract, it is hoped, will restore useful vision.

*CASE II. Removal of a small chip of steel from the macular region with the magnet; loss of central vision and detachment of the retina; preservation of the eyeball, and eccentric vision.*

W. S., 26 years of age, was injured April 24, 1895, while striking a steel chisel with a hammer. He felt that something had struck his eye and in a few minutes he noticed the appearance of a floating object before him. He immediately applied for treatment at the City Hospital, and when seen about two hours after the injury the following observations were made: In the upper inner margin of the cornea there was a minute linear wound. The pupil was round. In the upper inner portion of the iris very near the periphery there was a small black spot, an opening in the iris tissue. After dilating the pupil with atropia an opacity was seen in the upper portion of the lens. With the ophthalmoscope a small black point surrounded partly with white border and partly with blood was seen lying midway between the fovea and the papilla, on a line just above the upper level of the papilla. The spot itself was one-quarter P. D. by one-half P. D. in size. A number of streaks of blood could be followed, running downward and slightly outward and forward into the vitreous. One large hemorrhagic effusion was seen lower down in the vitreous, forming a perfect arc.

Central vision was  $\frac{6}{60}$ , but there was a distinct scotoma about 10° in each diameter, situated to the temporal side and below the point of fixation, but reaching to within 4° or 5° of this point.

Taking into consideration the fair central vision, and the hopelessness of retaining this after any operative measure, no effort was made at the time to remove this foreign body. He was kept at rest and watched for several days; but the irritation of the eyeball became greater day by day and his vision lessened.

On April 30, therefore, when all hope that the chip could be left in the eyeball without danger had been given up, we proceeded to extract the same by means of the magnet. The patient was put under chloroform; a conjunctival flap was laid back over the region of the external rectus muscle, and an incision was then made just above the external rectus muscle, back of the equator of the eyeball.

The incision was about 3 mm. in length, and was made as far back in the eyeball as was convenient after the eyeball had been rotated inwards as far as possible. The direction of the incision was from before backwards. An incision was likewise made into the vitreous with a Graefe knife, according to the method of Hirschberg.

The curved magnet point was then inserted, and after having been turned slightly in several directions it brought out a minute flat scale of steel, 1 mm.  $\times$  1.5 mm.

Very little vitreous was lost during the operation. The immediate effect of the operation was to increase the congestion, but after a few days this subsided, and in about ten days the eye was almost white. At this time large vitreous opacities were to be seen with the ophthalmoscope. There was little pain after the operation and this subsided almost immediately.

The vitreous gradually became clearer and the nasal half of the retina soon assumed its normal appearance; after some time the blood was entirely absorbed and a white linear scar could be seen in the outer portion of the retina, near the periphery. Central vision has never returned. He was examined November 26, 1895, the eyeball presented no external appearance of disease, excepting a slight degree of divergent strabismus.

He can count fingers at a few feet, slightly eccentrically. The field of vision is restricted, excepting in the temporal portion, where there is no loss. The binocular field of vision is, therefore, complete.

There is an irregular and extensive, though slight, detachment of the retina, especially below and toward the outer side, in the temporal portion involving the macula and reaching the

papilla below. In the outer portion of the retina, near the equator, the white linear scar is distinctly visible, and attached to it a large, white connective tissue mass can be seen. The traumatic cataract has made no progress; is slightly smaller than at the time of the operation. It consists of a spicule in the upper inner part of the posterior capsule and a smaller opacity diametrically opposite in the lower portion. The eye has been completely free from any irritation for months.

Though central vision was not preserved in this case, and while detachment of the retina has occurred, it is fair to say that we have preserved the eyeball and an amount of eccentric vision which is quite useful, for without the operation there was every indication that the eyeball would soon have had to be sacrificed.

*CASE III. Removal of a chip of steel imbedded in the ciliary body and periphery of the retina; result, perfect vision.*

Mr. E., 47 years of age, while cutting off a piece of steel with a steel chisel on October 25, 1894, felt something strike his eye, causing severe pain for a few minutes. For several hours he was unable to see, but sight returned and he resumed his work. During the following days his sight was fair, though he continually saw a cloud moving before him towards his left side.

October 29. Four days after the injury, he consulted me for the first time. The eyeball was congested, the media were fairly clear and the optic disc and retina were normal; vision was about  $\frac{1}{2}$ .

After the pupil had been dilated by atropia, we could see in the innermost periphery of the ophthalmoscopic field, just a trifle below the horizontal meridian, a dark prominent mass, partly black, partly white and near it a small effusion of blood. The size of this object, which evidently was a chip of steel, could not be determined, for measurements in the periphery are not trustworthy. Still, as later developments showed, what was seen with the ophthalmoscope must have been but a small part of the foreign body, the greater portion of which was buried in the tissues. The field of vision showed a small defect in the outer periphery.

On carefully examining for the point of entrance of the foreign body, we found a minute scar at the inner border of the cornea, about 1 mm. in length. The iris showed no injury, but deep in

the inner angle of the anterior chamber there was a dark red streak of blood. The chip had therefore passed in between the iris, the ciliary body and the sclerotica and was imbedded in the retina at the equator of the eyeball.

October 31. His condition was worse, the cornea becoming hazy, showing fine streaks and dots, the iris hyperemic; the pupil would not dilate at maximum, though atropia was instilled frequently.

There was manifestly no hope in waiting, and on the following day the operation for the removal of the foreign body with the magnet was performed.

It is essential in operations of this kind to pay strict attention to two points: first, to antisepsis, for we expose the vitreous humor, which is one of the most easily infected tissues in the human body; the second important matter is to properly locate the chip by correct measurement, for otherwise the point of the magnet may be at too great a distance and the operation thus prove a failure.

From the field of vision we learned that the defect at most reached to  $66^\circ$ , or to a point corresponding with a part of the retina 12 mm. behind the sclero-corneal junction (according to Donders). But the retina is usually affected beyond the immediate seat of the foreign body, and its situation in this case would therefore be somewhat less than 12 mm. from the corneal margin.

On the other hand the body was seen to be located at the periphery of the ophthalmoscopic field. Now we know that the most peripheral part of the eyeball that can be seen with an enlarged pupil is the equator or a little beyond it.<sup>4</sup>

Assuming then, that it was situated just at the equator, we would look for it 8 mm. behind the corneal margin. The conclusion, therefore, was that we would find the chip just below the horizontal meridian at a point 8 mm., or at most 12 mm., behind the cornea.

Operation under chloroform. With a compass we measured off a point 8 mm. behind the corneal margin, and a trifle below the horizontal meridian, after the conjunctiva had been thrown back as a small flap; from this point we made an incision directly backwards, extending about 5 mm., and therefore embracing the region where we had located the body. The insertion of the

<sup>4</sup> See Hirschberg, *Centralbl.*, 1891, p. 321.

internal rectus was next separated so as to enable us to explore the wound more easily. The curved point of the magnet was introduced into the opening and held in different position, when the chip came out upon the tip. It measured 4 mm.  $\times$  2 mm.  $\times$   $\frac{1}{2}$  mm. and weighed  $\frac{1}{8}$  gr.

There was not the slightest prolapse of vitreous and the bleeding was very slight; the conjunctival flap was next readjusted and the patient promptly recovered. On the day following the operation there was absolutely no pain, and sight was fair. There was very little effusion of blood into the vitreous in the region of the wound and the defect of the field of vision was slightly larger than before the operation.

The vision rapidly improved, the conjunctiva lost all injection, and in a short time the eye was practically restored to its normal condition. The eye was last examined October 20, 1895. There was no evidence of the injury save the very peripheral lesions in the retina. V., L. E. with + 3.0 D. =  $\frac{8}{8}$ , almost perfect.

The ophthalmoscope showed a small scar at the seat of operation and the hemorrhagic effusion was completely absorbed. We may therefore truthfully say that this eye and its sight were saved by the magnet operation.

As a point of practical importance it may be mentioned that in the latter operations a small storage battery of three cells was used and that this was found highly satisfactory. The Grenet cell, which was formerly used with the magnet, is unreliable and never produces as high a power as does the three-cell storage battery.

## EPHEDRENE HYDROCHLORAT.

By GEORGE F. SUKER, M. D.,  
OF TOLEDO, OHIO.

OPHTHALMOLOGISTS have long been looking for a mydriatic for diagnostic purposes which would possess the following advantages:

- (a) Rapid in its action.
- (b) To produce as nearly as possible a maximum dilatation of the pupil.
- (c) To be of short duration, *i. e.*, the effects.
- (d) Not to interfere with the act of accommodation.
- (e) To produce no augmentation or diminution of the intra-ocular pressure.
- (f) To be free from untoward accessory effects.

Though duboisin, atropin, homatropin, scopolamin and cocain fulfill some of the named requirements, yet no one meets them all. However, in ephedrene we possess a mydriatic which answers all of the above conditions.

Ephedrene is an alkaloid from the leaves of *ephedra vulgaris* or *ephedra distachya*, and not to be confounded with Ephedren, which latter is an amorphous compound obtained in connection with glucose during the decomposition of the glucoside present in *ephedra antisypilitica*. This ephedrene is considered the active principle of the plant. Kindly note the difference in the spelling of the two—ephedren and ephedrene.

The alkaloid ephedrene is not amorphous, but a colorless stable crystal, melting at 410° F. (210° C.), soluble in four

parts of water, readily so in alcohol, practically insoluble in ether. The hydrochlorid, in which form the base is chiefly used, appears in colorless needles, very readily soluble in water.

It was Mr. Kinnosuke Miura, of Tokio, who first found the aqueous solution of ephedrene. The clinical researches of Kinnosuka Miura first demonstrated the mydriatic properties of ephedrene hydrochlorat when applied externally in frogs and mammals, as well as evincing its lethal effect when a sufficient quantity was taken internally.

It causes death by the arrest of the heart's action and respiration. He reported a series of eighteen cases of the use of a 10% solution, carefully noticing its mydriatic properties. In each and every case he noticed a uniformity of action as well as a good reliability. The suspension of accommodation was not perceptible. In each case one or two drops of a 10% solution were instilled into the conjunctival sac at a few moments interval, and a complete mydriasis was obtained in ten to twenty minutes.

Of late Dr. Groenouw and Dr. Geppert have made extended clinical experiments and these confirm fully those of Miura. However, they use the ephedrene in connection with the homatropin. They say that the addition of homatropin greatly increases the intensity of the ephedrene, yet not influencing its transitory effects. The following is the formula which they employ:

Ephedrene hydrochlor.....	10
Homatropin hydrobrom.....	0.01
Aq. dist.....	10.0

The homatropin may add to the efficiency of the ephedrene, still you obtain just as good results in using the latter alone. The only difference is that the mydriasis is obtained sooner when the combined solution is resorted to; and, that strong light does not have a tendency to cause as much pupillary contraction. Furthermore, the dilatation is not quite as great when ephedrene is employed in place of ephedrene and homatropin combined. It has been my

experience that the ephedrene alone answers all requirements. It makes a very convenient mydriatic for examinations of refractive errors by skiascopy.

Both Groenouw and Geppert admit that ephedrene is an admirable mydriatic for diagnostic purposes, and the writer also holds this opinion after having employed it in a number of cases.

Still, it must be said that ephedrene can not replace homatropin or atropin for therapeutical purposes. An irritated and inflamed iris does preclude any definite or appreciable pupillary dilatation. Hence in such cases we still must employ the stronger mydriatics for diagnostic purposes.

It has also been noticed that children and aged patients are more readily influenced by ephedrene than are the robust and vigorous. No untoward results follow the long continued instillations; in cases where it is deemed advisable to maintain a moderate mydriasis for any period of time, a 1% solution is excellent—two or three drops being instilled several times daily.

In conclusion, the writer will say that ephedrene hydrochlorat, so far, is the only mydriatic which fully meets the above stated six conditions.

For a more detailed review on the subject see: *Helbing's Modern Mat. Med.*; *Edinburgh Med. Jour.*, Jan., 1888; *American Drugg.*, May, 1888, and *New York Med. Jour.* Vol. LXI, No. 23.

The "Monticello."

## A SEVERE CASE OF TOBACCO AMBLYOPIA.

By A. PROUDFOOT, M. D.,  
OF MONTREAL, CANADA.

OCULIST AND AURIST TO THE WESTERN GENERAL HOSPITAL AND  
PROTESTANT INFANT HOME; ASSISTANT OCULIST AND AURIST  
TO THE MONTREAL GENERAL HOSPITAL; CONSULTING  
OCULIST AND AURIST TO THE MONTREAL  
DISPENSARY.

THE extreme rarity of the case which I am about to relate is my best excuse for taking this opportunity of putting it upon record.

December 13, 1888. I was consulted by M., a Cuban by birth, 24 years of age, a student, for failing sight. At the time of his visit he complained of everything appearing misty and indistinct, and he was only able to read No. 3 Y a line at a time with considerable difficulty. Vision for distance was  $\frac{3}{50}$  in right eye and  $\frac{1}{60}$  in the left eye. He had a manifest hypermetropia of 1 D. in each eye with slight convergent strabismus in the left. On examination with the ophthalmoscope the media were found to be perfectly transparent, pupils moderately contracted, the discs of both eyes were of a peculiar mottled appearance resembling a checker-board, the squares having a glistening vitreous appearance as if painted upon porcelain, and varying in color from white to slate or bluish-green. The margins of the discs were very indistinct, but the rest of the fundus was perfectly normal.

The field of vision was contracted, and central scotoma for red and green not very well marked.

I must confess that I was at first unable to make a satisfactory diagnosis as there was no history of syphilis or any other constitutional disease to account for the trouble. I, however, ascertained that the patient was in the habit of

smoking from twenty to thirty cigarettes a day and inhaling the smoke; that he had begun to smoke and chew when only six or seven years old, and had been addicted to the excessive use of tobacco ever since; he, however, discontinued the practice of chewing as the habit of inhaling the cigarette smoke increased upon him.

With these facts in my possession, I had no difficulty in coming to the conclusion that I had a case of toxic amblyopia to deal with, especially as I remembered having seen a case of toxic amblyopia in a boy of 17, at Moorfields Hospital, in London. The boy had been employed in a tobacco factory ever since he was a little fellow, and was engaged in handling tobacco that was soaking in tubs of water, so that his arms were constantly wet above the elbow. He also chewed tobacco to excess.

The occurrence of toxic amblyopia before the age of 30 is extremely rare.

Uthoff only found four cases in a series of 135 between 28 and 30, the greatest percentage of cases being between 40 and 50. My own experience is that all my cases have been in patients of 30 years and upwards with the exception of the one under consideration, and I have not seen another case excepting the one at Moorfields which I have mentioned. And I can only account for the early appearance of the disease from the fact that the patient had begun the use of tobacco at a very early period, and had continued its use in perhaps the most injurious way in *chewing*, and *inhaling* the *smoke* from *cigarettes*.

I put this patient upon a mixture containing  $\frac{1}{24}$  of a grain of strychnia 3 t. d.; prohibited the use of tobacco in any form, and ordered glasses of + 1 D. to correct his M. H., and improvement was rapid.

I examined the patient just one year afterwards and found his sight quite restored.

The discs, however, had the same checker-board appearance, so I concluded that that peculiarity must have been congenital.

2 Phillips Place.

REPORT OF A CASE OF DERMOID GROWTH ON  
THE SCLERO-CORNEAL JUNCTION.BY A. EDWARD DAVIS, A. M., M. D.,  
OF NEW YORK.INSTRUCTOR IN DISEASES OF THE EYE, NEW YORK POST-GRADUATE  
MEDICAL SCHOOL AND HOSPITAL, ETC.

MORRIS S., a Russian Jew, 17 years of age, a tailor, was sent to my clinic at the Post-Graduate School on December 10, 1894, by Dr. A. D. Mewborn of this city.

*Family history:* Both father and mother are living and in good health. He has one brother older than himself who is healthy; also a younger sister who has lateral spinal curvature. He, himself, has always enjoyed good health. At birth a small whitish growth was noticed at the temporal margin of the left cornea which has grown very slowly since.

*Present condition:* At the temporal margin of the left cornea, encroaching about 3 mm. on its surface, (and an equal distance on the sclera) is a small white tumor with two dark hairs projecting from its summit. This tumor is raised about 3 mm. in height. Vision in the right eye is  $\frac{2}{8}$ , while in the left it is but  $\frac{2}{8}$ , due to an astigmatism. The ophthalmometer showed in the left eye astigmatism with the rule 4 D. axis  $60^\circ +$  or  $150^\circ -$ .

*Treatment:* Under cocain anesthesia the tumor was removed by means of a Beer's knife and scissors. The growth was very firm on the cornea, cutting like cartilage. After the tumor was removed the surface at site of the tumor was dried with cotton, and that portion of the cornea

on which the tumor was situated cauterized with pure carbolic acid applied on a blunt probe. The scleral conjunctiva was closed with one suture and the eye bandaged. The patient was discharged after ten days treatment.

November, 1895. Eleven months after operation, there is no return of the growth. A small, white opacity on the cornea marks the site from where the tumor was removed.

The ophthalmometer shows astigmatism with the rule, 1.50 D., axis  $45^{\circ} +$  or  $135^{\circ} -$ .

Dr. F. T. Reyling, pathologist to the Manhattan Eye and Ear Hospital, made a microscopical examination of the tumor, which is as follows:

DEAR DOCTOR.—I find the little tumor to be composed of epithelial cells with a small amount of connective tissue, a sebaceous gland and two or three hair follicles.

*Diagnosis:* Dermoid tumor.

7 East Forty-First Street.

ELECTRICITY IN THE TREATMENT OF  
STRABISMUS.BY THOS. S. BLAIR, M. D.,  
OF HARRISBURGH, PA.

ONE who is in contact with neurotic patients will frequently meet with cases of strabismus in which the usual operative procedures have been productive of but temporary or of very imperfect results. Such an experience has led me to clinically investigate strabismus from the neurologic standpoint. It is my aim, in this article, to state the objections to current practice, to call attention to the neurotic factor in etiology, and to suggest treatment for such cases as have nervous elements.

The ordinary case of strabismus, in my judgment, does not come under treatment *early* enough. First seen by a general practitioner, it is commonly temporized with and reaches the eye specialist after the good muscle has so contracted that there is little left for him to do but to cut it or its tendon. General practitioners should *always* give these cases immediate attention, thus saving many an operation, at best uncertain, and seldom giving perfect results. On the other hand, I believe the specialist usually falls into too much of a routine in his treatment of these cases. To him a case of squint is merely "a case of squint," and he has his remedy as ready as he has his "hypo." Too often, at least, is this the case, so that the mechanical factor is considered very much to the exclusion of the etiologic one. Viewing it mechanically, however, it impresses me that in cases seen *early* enough and before the good muscle has

become *permanently* shortened, it is poor practice to injure a good tissue in order to accommodate a poor and weak one. I have directed my attention for some time to the problem of giving strength and tone to the weakened muscle and so curing the condition without injuring the healthy muscles. Before taking up the matter of treatment, let us consider the neurotic factor in etiology.

The fact that six of the twelve pairs of cranial nerves send branches to, or are exclusively distributed to, the optic apparatus, and also that the cervical and cerebral sympathetic send branches thereto, is quite sufficient reason for a very distinct nervous factor in the etiology of the disease we are considering. All observers have noticed cases of squint caused by some temporary condition of the nervous system and which pass away with the return to health. Very frequently, however, the squint does not disappear and becomes chronic. This condition is especially apt to follow typhoid and other exhausting diseases and is first shown in feebleness of accommodation. Dr. Wm. F. Norris, in an article in *Pepper's System of Medicine*, says, in this connection, "the most common eye affections show as an optic neuritis or paralysis of some of the muscles supplied by the third pair of nerves and are due to a complicating meningitis." Southern physicians report strabismus as frequently following yellow fever. Others report it following pertussis, which latter I have observed, and found the cases quite amenable to treatment. Some writers claim that the excessive use of tobacco causes amblyopia, and it, in turn, strabismus. Vulpian directs attention to the transient associated movements of the head and eyes due to central lesions and manifested in the spasmodic contraction of one set of the muscles. The eyes are usually both turned in a direction opposite to the hemiplegia. Cases of nystagmus as seen in miners and others who strain the eyes are doubtless analogous to writer's cramp, and equally amenable to non-surgical cure. In *tabes dorsalis*, transient strabismus due to paralysis of the external rectus is frequently noted. Permanent paralysis of this muscle often

accompanies affections of the base of the brain. Other nervous factors in the causation of strabismus could be given, but enough has been said to emphasize the necessity of going very carefully into the history of each case before any treatment at all is instituted. None of these observations are essentially new, but the need for greater heed to them justifies their collected presentation in this connection.

In the treatment of strabismus we cannot eliminate tenotomy, as it alone can relieve certain aggravated or long continued cases, but it is my belief that electrical treatment, which has long been recognized in the text books and been employed by a few ophthalmologists, has a much wider application than is usually accredited to it, and should take the place of surgical procedures in many cases at present operated upon. In advocating the use of electricity, I would not urge the neglect of prismatic glasses and of special exercises for the weak muscles, but in my own practice I have usually found little benefit from these methods which are so much in the hands of the patient. The fault has been more with the indolence of the patients, however, than with the methods.

In applying the galvanic current to the eye, I have found it essential to have a milliampèremeter and a rheostat in circuit and to commence with a very weak current. I very seldom go higher than 5 *ma.*, but the susceptibility of subjects vary so much that no hard-and-fast rule as to strength of current can be given. Usually a large sponge electrode at the back of the neck and a fairly small one at the motor point of the weakened muscle gives best results in my hands. An exception to this rule is in cases of nystagmus, which are always aggravated when electricity is passed through the cerebellum. Sometimes I place one electrode in the hand of the patient. It is usually best to use the negative electrode about the eye as it is supposed to be less irritating and it gives a contraction with slightly less current than does the positive. A medium-sized electrode is better than one having a very small area conducting the current. The ordinary faradic coil is not at all well

adapted to eye work, as the secondary coil is seldom wound to a sufficiently high resistance and the current is, therefore, too irritating. I have had best results with a Gaiffe apparatus having a long coil wound with very fine wire, and interrupting mechanism capable of vibrating as low as forty-eight times a minute. In using the faradic current, I commence each sitting with a light and very rapidly interrupted current, gradually reducing the vibrations to about sixty a minute. Each succeeding sitting I use a slightly stronger current until I adjudge the limit has been reached. Treatments should be given every other day and continued for some time. Experience only will be a guide as to strength of current best for any individual case, and will determine which kind of current to apply. Where there is a central lesion I prefer the galvanic, as also in most of the cases caused by severe constitutional diseases. In paralytic forms or those due to local neuritis, I prefer the faradic. In some cases, both currents can be advantageously employed. Ten to fifteen minutes should be the average length of a sitting. In cases of fairly long standing, where there is spasm or irregular contraction of any one of the muscles, I use atropia locally, and sometimes large doses of gelsemium sempervirens internally. Those who have never given large doses of this latter drug would be surprised how soon toleration can be established. I have given as high as one teaspoonful of the tincture at a dose, but that is the exception and not the rule with me. It relaxes the muscles to a wonderful degree in smaller doses, and it is while the patient is under its influence and the strong, contracted muscle is relaxed, that I faradize the weak muscle. In treating strabismus by electrical means it is absolutely essential to have the best and most accurate apparatus obtainable and to be possessed of great patience. A careless or hasty application of the method will result only in utter failure.

As to results, without going into a lot of tiresome details, I would say that about three-fourths of carefully selected cases of a character in which the treatment seemed indi-

cated, have responded favorably. My experience with the method would not justify me in definitely claiming so large a proportion as always holding good. Men's experiences differ, and I have not applied it in a large enough number of cases to dogmatize at all. One-fourth of the cases have failed, but investigation of such cases, as they further develop, is very apt to show a tertiary syphilitic or a degenerative element. In cases due to direct injury and in cases of very long standing, I believe electricity to be almost, if not entirely, useless. Children respond the most readily, and I have noticed in general that if electricity benefits a case at all it does so very decidedly, and improvement is soon noted. It seems to either do a great deal of good or do none at all. In quite an encouraging proportion of cases it causes complete cure. With accurate apparatus and careful discrimination, added to the skill which can come only from experience, I believe it a method by which many very crooked eyes can be straightened better than they can by division of the tendons, and many slight cases, not sufficiently marked to justify tenotomy, be readily cured.

218 Locust street,

REPORT OF A CASE OF MOLLUSCUM CONTAGIOSUM WHICH GOT WELL UNDER THE USE OF YELLOW OXID OF MERCURY OINTMENT.

BY A. EDWARD DAVIS, A. M., M. D.,  
OF NEW YORK.

**L.** M., 2 years of age, German, was admitted to my clinic at the Post-Graduate Medical School October 20, 1895.

*History:* The mother of the patient says that one or two little tumors appeared on the lower lid of the left eye as long ago as a year. As they caused but little trouble she did nothing for them until about three months ago when two or three more small tumors appeared. For three months the child has been under a doctor's care, but with no benefit.

*Condition:* On the middle of the margin of the left lower lid, among the cilia, is a small rounded tumor about the size of a split pea with a depression at its summit. From this growth a small amount of sebaceous material was pressed. At the outer extremity of the lid, below the line of lashes, two other tumors of a similar character are situated, while at the inner extremity of the lid, below the line of lashes is still another, also one on the left side of the nose.

No microscopic examination of the contents or of any portion of these growths was made as it seemed so plain a case.

*Treatment:* As I did not have time to operate on the growths the first morning the patient appeared, I prescribed:

R Hydrg. ox. flav. .... grs. iv.  
Vaselin albae ..... 3 ss.  
M ft. Ung. ....

Sig. Rub a little of the ointment on the tumors twice a day.

This was given simply as a placebo and the patient instructed to return in a week when I expected to remove the growths.

The patient returned at the appointed time, but so much improved, the growths peeling off from the top, that I decided to let the *placebo* alone. After five weeks treatment the patient was discharged entirely well.

*Remarks:* Had any such favorable result as this been looked for from the use of the ointment of the yellow oxid of mercury (half official strength), I certainly should have had a microscopical examination of the tumors made. The history of the case, however, together with the appearance of the growths, leave but little question of the correct diagnosis.

If molluscum contagiosum is a contagious affection, and its contagiousness due to a specific germ, as is supposed by the majority of authors, I can readily see how the yellow oxid of mercury, a germicide, could have a curative effect in such cases.

I report this case in order that others may try this simple remedy and either prove or disprove its efficacy.

7 East Forty-first Street.

A PRELIMINARY REPORT OF A PERIMETER  
BASED ON A NEW PRINCIPLE.<sup>1</sup>

BY DR. JOSEPH E. WILLETTTS,  
OF PITTSBURG, PA.

LATE CLINICAL ASSISTANT TO DR. H. KNAPP, AT THE NEW YORK  
OPHTHALMIC AND AURAL INSTITUTE AND VANDERBILT CLINICS,  
NEW YORK; EXECUTIVE OPHTHALMIC SURGEON TO THE  
EYE AND EAR HOSPITAL OF PITTSBURG.

I do not think that I am alone in having lost patience while taking the field of vision with our present instruments. Who has not recognized the tediousness and inaccuracy of our present method of examining the color sense, or the examination for color blindness with Holmgren's Wools.

The objections to the present method of ascertaining defects in the visual field are, indeed, numerous. In 1892, I took the field of vision of a man with a perimeter at the Manhattan Eye and Ear Hospital, for twelve consecutive mornings, at the same hour, and as near as possible under the same conditions, in order to ascertain the degree of accuracy of the perimeter. The patient was an intelligent man who was paid for his time, and who was there for that purpose and nothing else. I carefully instructed him to be observant and truthful in his statements. On comparing the results there were no two alike. I am sorry that I did not keep the charts so that I might reproduce them; however, it needs no verification as the experience is a general and not an isolated one.

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<sup>1</sup> Read before the Pittsburg Academy of Medicine, December 16, 1895.

This is strong evidence of the inefficacy of the perimeter, even with an instructed patient. What then can we expect of this instrument with uninstructed patients, where the operator must rely on the personal equation of the patient, and his own ability, not only to approximate the degree on the unmarked portion of the perimeter, but also to approximate how much of the field of vision is cut off by an unusually high nasal bridge, a prominent brow, or a malar bone. How is this approximation of restricted field from a prominent feature made? Is it computed by figures? Is there a known amount of restriction of the visual field for each *mm.* of prominence of individual features above normal? No, the result is accepted, regardless of personal equation, the physiognomy, or the position of the patient, and an approximate allowance made for the numerous inaccuracies of which the position of the patient is not a minor one by any means, especially in those cases of a neurotic type—cases of hysteria in which we are called upon to take the field of vision, and who will not remain in the proper position. In such cases the forehead may be inclined forward, with the eye close to the projection in a straight line with the stationary disc, thus giving the field a wide scope in one meridian; while in the next meridian, the chin will be thrust forward, and the eye drawn backward, and the inferior field greatly restricted, to say nothing of the patient's inability to control the tendency to look at the moving disc instead of the stationary one which also materially adds to the unreliability of the results obtained.

Recognizing that the unsatisfactory statements of the patient materially influence the result, that there must be an approximate allowance made in each case for the constantly varying physiognomy; and that the time and inconvenience necessary for a conscientious examination of the visual field were decided objections, I endeavored to construct, or combine a number of prisms or cones, which would transmit or refract rays of light to that part of the retina corresponding to the degrees in the present peri-

metrical chart. Fixing myself in the position of the patient, I, with the prisms at hand, succeed in deviating the stationary disc to  $70^\circ$  on the perimeter. To make the result correspond as nearly as possible to the present accepted ellipsoid, color and form field, as the perimeter gives it to us would be necessary to have prisms of different strengths combined in a whole. On this principle I had an octagon ground. Recognizing later that this shape would be expensive and the results inaccurate, I constructed a cone-shaped hexagon, having all prisms of the same strength. Thus, a cone or cone-shaped hexagon with its sides cut at an angle  $70^\circ 40'$ , made of flint glass with an index refraction of 1,584, will throw six lights at the same time on the retina at the angle corresponding to  $70^\circ$  as taken by the perimeter.

Plates in text-books showing  $55^\circ$  to  $60^\circ$  to be the normal for white of the superior, inferior and temporal portions of the retina are misleading, and certainly are not correct any more than the plates showing restricted color field are.

The prism I have constructed has demonstrated to my satisfaction that there is no restriction of the normal field for any color or any object. The present restriction is not due to the inability of the retina to receive impressions at its periphery, but entirely to outside influences—the physiognomy, and the crude instrument by which the field is taken. All colors are recognizable with this prism at the periphery of the field, as well as inside of the color field, as at present recognized. That it is not so plainly seen at the periphery is partially due to the fact that to deflect an image to the  $70^\circ$  angle on the retina the rays can not pass through the angle of minimum deviation of the prism and thus transmit a clear image of the object; but instead, a distorted one is transmitted to the retina, which confuses the patient. If it were possible to throw an image on the periphery which was not distorted it would be very distinctly seen. That this is a fact is proven by directing the visual axis to one of the false images on the periphery, which necessarily causes it to fall on the macula. If its

indistinctness on the periphery were due to the insensibility of the retina, it should be distinctly seen when focused on the macula, which it is not, showing that its indistinctness is due to distortion alone. With this combination of prisms, or with the cone, which is the same principle, the field of vision and the color sense may be taken in an instant. If the  $73^{\circ} 40'$  hexagon or the  $70^{\circ} 40'$  cone is placed before the eye, and an incandescent light with a red globe turned on, and the patient sees six lights with the hexagon, or an unbroken ring of light with the cone, it is positive evidence, after a slight rotation of the hexagon, or without rotation of the cone, that not only the field of vision is normal at the angle of  $70^{\circ}$  for all meridians, but also that the color sense for red is normal at that angle. A row of incandescent lights, green, blue, yellow, or any of the complement colors, can be successively turned on, and the field and color sense for that angle established decisively in an instant. The cone, or the hexagon of prisms, which refracts at  $60^{\circ}$  can then be slipped in the trial frame, and so on down to  $10^{\circ}$ . If the  $70^{\circ} 40'$  hexagon, or the same degree cone, be placed before the patient's eye, the other being covered, and he can see no light, there is a concentric contraction inside of the  $70^{\circ}$  angle which indicates optic atrophy, or retinitis pigmentosa; while in glaucoma, corresponding to the nasal contraction, there will be but three lights seen, or a broken light with the cone. If one is missing, some localized lesion and if the color is not recognized, the pathological condition is readily understood. The lights are thrown on the retina in the shape of a hexagon, with a band of colored light connecting each individual light at different degrees of deviation, according to the strength of the prism or of the cone used.

That light can be thrown on the retina in a practical way at successive angles of  $70^{\circ}$ ,  $60^{\circ}$ ,  $50^{\circ}$ ,  $40^{\circ}$ ,  $30^{\circ}$  and  $20^{\circ}$  is a difficulty which I have overcome, and which I will explain and giving the formula in a future communication on this subject. These formulæ have all been worked out, but the time is lacking to incorporate them into this report. The

following shows the angles of the prisms required to give the necessary deviation, when made from flint glass, with an index refraction of 1,584:

Given deviation .....	75°	70°	60°	50°	40°	30°	20°	10°
Angle of prism or cone required..	75° 11'	73° 40'	69° 21'	63° 13'	55° 8'	44° 50'	32° 2'	16° 49'

The hexagon has the advantage over the cone because it does not only tell us of the lesion, but also the extent of it. Say in detached retina, for example, putting on the hexagon, and, as an illustration, say one light is missing, the hexagon should be slightly rotated until the patient would see the missing light, and the point of its reappearance noted as well as the site of the disappearance of the one following it, which would give us positive evidence of the extent of the detachment for future reference.

As is well-known, the objection to the use of high-degree prisms in ocular work has heretofore been the prismatic spectrum. This spectrum which has been previously an objection, is, in my prism and cones, used to an advantage; for, in the higher degrees, it is sufficiently pronounced to be used as a color test, it having all the necessary colors, and I have demonstrated in the clinic of the Eye and Ear Hospital that the individual colors are recognized by the patient. It is not necessary to dilate on its efficiency as a confusion test in simulated blindness. If a patient is made to see six lights, the angle of which may be changed at the will of the operator, he naturally will not know what to expect in subsequent examinations. This is another advantage of the prism; the cone is of no importance in this test. It is only the weaker prisms that are of any value as a test for muscular insufficiency, on account of the deflection being so great in those of higher degrees, the lights are not as distinct as the one in the middle, it being the image focused on the maculae of the other eye. In the weaker prisms, ground at an angle of 32° 2', the ray of light is deflected to 20° on the retina, and the contrast is not so great. If there is any insufficiency of any muscle, the middle light, instead

of being in the center of the ring of the six lights will be close to one of the other lights, and the muscle that is affected will be readily suspected according to that one of the six lights to which it is in closest opposition. The weaker prisms may have the point ground off and polished, and the central vision taken at the same time; or, to assist in detecting insufficiency, a red glass, covering the eye not being examined, could be fused into the one corresponding to central vision of that covered by the hexagon.

In the high-degree prism the deflection is so great that if put in the trial frame the rays are lost and do not enter the eye. It is necessary that the prism be held close to the eye, in fact, touching the lids. This is the only objectionable feature I have discovered, but it does not compare with the many I have found with the perimeter. Another point to bear in mind is that the patient must locate the false image with the eye in the normal position. If the strong prisms are put in first the patient, in trying to locate the lights instead of looking at the distant light, turns the eye in the direction of the false image which, of course, changes its angle in the retina; this is readily overcome by putting on the weak prisms first and instructing the patient.

The prism and cones are now being made in this city; they will come in sets of seven, in a neat box, some of them arranged for the trial frame, and the others adapted for close application will be fitted with a handle. They cannot be manufactured for less than \$25 per set, at least for the present, because the necessity of having the exact angle and no machinery being specially adapted for this work, a number are spoiled in the grinding after considerable labor has been spent on them.

To recapitulate, the advantages of the prismatic perimeter over the old one is:

1. That the field of vision can be accurately taken in an infinitely shorter space of time.
2. That the color-sense can be taken at the same time that the form-field is taken.

3. That the result can be depended upon, inasmuch as it is always taken under the same light-stimulus, while under the old method one might ask: Under what conditions was this field taken? Was the light good? Was the stationary disc and the moving disc perfectly white, or were they mottled and dirty, and was there anything unusual in the patient's physiognomy?

4. That it is a new confusion test for simulated blindness.

5. That it is a new muscle-balance test, especially of the oblique muscles.

In an article to appear later I hope to present the subject in all its bearings, and to prove my assertions with the needful formulæ and data. While the statements made at this time are believed to be correct, I reserve the privilege of making modifications or adding new facts that further investigation may demonstrate.

I am indebted to Prof. James E. Keeler, of the Allegheny Observatory, for valuable information regarding the angles required to deflect the rays of light to the necessary degrees on the retina; to Drs. Adolph Koenig, Charles S. Shaw and Ewing W. Day, for the interest they have shown and the many timely suggestions given; to Mr. MacDowell, of Allegheny, and also to Messrs. McCullough & Spangler, opticians, who made for me the prisms and other apparatus necessary in my experiments.

Westinghouse Building.

# INFLUENCE OF THE GENERAL NUTRITION UPON THE COURSE OF OPHTHALMIA IN THE NEW-BORN.\*

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MOLOGY AMERICAN MEDICAL ASSO-  
CIATION, 1895.

THE state of the general nutrition is a recognized element in all local or general affections, and is especially noticeable in the infectious diseases. Where tissues do not receive proper nourishment through defective assimilation, insufficient or improper food or deficient local nutrition, they do not afford the usual resistance to infective germs and their toxins. We may, perhaps, be led to infer from some writers and recent efforts toward securing legislation† for the prevention of blindness that ophthalmia

\* Read at a meeting of the Northwestern Medical Association at Stevens Point, Wis., January 14, 1896.

† It must not be inferred from this paper that I am adverse to legislation, as I have secured resolutions\* of this nature in Wisconsin, and expect to present same to our Legislature.

* R	Hydrastiae sulphatis.....	.30
	Acidi borici.....	.30
	Sodae biborici.....	.30
	Tr. opii deodoratae.....	2.
	Aq. dist. ad q. s.....	30.00
M.	Filt. s. instill in eyes after cleansing.	

This is the formula so highly advocated by our esteemed confrere, Dr. X. C. Scott,<sup>4</sup> of Cleveland, who read, in 1894, a highly enthusiastic paper upon its action in purulent ophthalmia, stating that this "plan of

neonatorum or its sequelæ are in all cases preventable.

In 1893, Randall<sup>3</sup> honestly reported a case which resulted in utter blindness despite the fact that the child was delivered by an accoucher, attended by an oculist and had the services of a trained nurse during the whole progress of the disease. I referred to this instance in discussion of X. C. Scott's<sup>4</sup> paper before the American Medical Association, and stated that as yet I had not had a similar experience. Since that time it has been my lot to have had several cases in the practice of physicians of ability, having the services of trained nurses besides my own attendance from a few days after delivery and which under ordinary circumstances would have resulted favorably; but in which, owing to poor assimilation, there had been serious implication of the corneæ and resulting blindness.

treatment has robbed this disease of all its terrors; these cases have been cured within a week or ten days in every instance instead of running, as the books say, a course of four or five weeks in the most favorable cases. When the solution is properly used in cases of purulent ophthalmia there will be a marked improvement in the case within twenty-four hours, and within forty-eight hours there will be a remarkable diminution of the pus, chemosis of the conjunctiva and swelling of the lids." Dr. Thompson<sup>6</sup> says in his published letter: "He (Dr. Scott) tells me that he does not use silver now." Dr. Scott writes<sup>5</sup> me that he "follows the same course and has never had occasion to regret it in treatment of all cases of purulent ophthalmia, and that in reports from different parts of this country other medical men have been unanimous in their experience as to good results." He now uses weak solutions of nitrat of silver with the hydrastin solution. It must be that the good results obtained by him are more due to stringent cleanliness and the silver than to the specific action of the hydrastin collyrium. Although in discussion of this article I took exception to his statements from a theoretical point of view. I have used this preparation in a dozen out of twenty recent cases of blenorrhœal ophthalmia, and now, from the practical side, can not agree with his views. The hydrastin is certainly beneficial, but not more so than boric or silver or other antiseptic solutions used in the same way. I do not find that it has much specific influence in mitigating the conjunctival inflammation or that it materially cuts short the course of the ophthalmia. Owing to the prominence of its advocate and the wide publication given to the article, and to the fact that another esteemed colleague<sup>6</sup> has most favorably commented upon this method of treatment, I feel it incumbent upon me to state my experience, in hope that others may not be led astray and depend upon hydrastin to the exclusion of silver and other recognized forms of treatment.

*Case I.* August 22, 1895, Dr. J. called in my associate, Dr. C. W. Root, in consultation over a full-term infant whom he had delivered six days before, who had ophthalmia of four days' standing, with no corneal implication, and which was esteemed by the consultant as not severe. Both parents denied gonorrhea separately and on several occasions. Mother acknowledged leucorrhea of several years' standing existing before marriage, but which, since childbirth, has disappeared. She had no treatment and had not called attention of the physician to the fact. The latter reported a cleanly delivery; that the eyes were cleansed by him with boric solution and usual cautions given. As is customary in practice among the artisan class, he ceased attendance after three visits and left directions. At the last visit he noticed that the eyelids were red on the edges and gave a boric collyrium. Two days later he was informed that there was matter in the eyes and immediately sent for Dr. Root, who gave the usual guarded prognosis, obtained a trained nurse, ordered treatment as follows: 1:10 000 sublimat wash every half hour, atropin (one per cent) in ointment, and collyrium of hydrastin\* making applications of two per cent argent. nit. to eyelids once a day for a week, when the discharge had almost ceased and eyes were apparently doing well.

When the child was three weeks old I saw it with my colleague and considered that it would soon be well, and so informed the family, but on the occasion of the next visit he found the cornea slightly hazy, and seeing the case on the next day I corroborated his opinion. Four days before (the weather being at this time intensely hot,) the mother had developed gastro-enteritis and the baby had immediately been<sup>2</sup> effected by her condition. She had noticed that the milk was less in quantity and thinner; that the child had colic and was very restless after nursing. The discharge from the eyes was scanty and necessitated cleansing only once in every two hours. Silver treatment had been given up for ten days. The wash was changed to boric acid three per cent, atropin-iodoform ointment,\* and the hydrastin collyrium continued. Mother given Pabst malt extract. The nurse had been discharged by the family several days before. The cornea

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* R	Atropin alkaloid.....	.30
	Iodoform pulv.....	1.50
	Petrolat.....	30
M.	Ft. ung. s. In eyes every 4 to 6 hours.	

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gradually became more opaque without ulceration, the epithelium remaining intact throughout the whole course of the disease and the corneæ staining but slightly to pyoktanin (1:1,000) which was later used. The child lost flesh for a few days, but soon recovered as the mother's condition improved. On September 18 the case was sent to Wisconsin General Hospital with the mother, and remained there a number of weeks. When discharged it had partial staphylomata and leucomata of the corneæ, which afterwards cleared about the limbus. Child became well-nourished generally. On December 10 I made a double optical iridectomy with the object, if possible, of affording some vision and of diminishing the intra-ocular pressure, and on December 27 was obliged to do operation for corneal staphyloma on the right side. Since then the case has progressed more favorably.

*Case II.* September 20, 1895, Dr. K. called me in consultation over a female child, 1 week of age, a premature delivery at seven months. As usual in these cases, child was heavily coated with vernix caseosa. An uneducated nurse had been engaged by the family, but delivery had been made by the physician, with aseptic precautions, the child's eyes washed with boric acid solution and carefully watched afterwards. On the seventh day I was called in consultation, learning that for three days there had been mucopurulent discharge from the eyes, but found the corneæ intact. A trained nurse was called in and treatment instituted of 1:10,000 sublimat wash every half hour to hour, iodoform-atropin ointment, and hydrastin collyrium, making nitrat of silver applications for several days, when the discharge rapidly abated. Although the swelling of the conjunctiva was not great, canthotomy was done.

The mother gave history of leucorrhœa and ovarian disease, for which a gynecologist had at one time recommended ovariectomy. She was unable to nurse the infant, which was put upon sterilized milk. The mother had severe post-partum hemorrhage and was low at several times for two weeks after delivery. On the fourteenth day of age the child apparently weighed less than at birth; the corneæ were opacifying in a striated manner under the epithelium, beginning from the centers and extending towards the limbus, but did not stain from the yellow collyrium. The discharge was scanty, necessitating cleansing only every second or third hour. The wash was changed to boric acid (three per cent) and other applications stopped with exception of atropin-

iodoform ointment. The general condition gradually became worse and the corneæ softened, going into a condition of keratomalacia. On the twenty-first day of its age it died of inanition.

*Case III.* October 29, 1895, Dr. M. called me in consultation over a male infant, full term, 3 weeks of age. History of sanguino-purulent discharge from eyes on third day. Treated by listerin and boric acid washes which were said to have rapidly subdued the swelling although the discharge persisted. On close questioning we found that the father had contracted gonorrhea about three weeks before the birth of the child, and at that time there was a suspicious discharge from the maternal genitalia. Antiseptic precautions were used and eyes washed. There was an old woman nurse in attendance, but she seemed faithful and apparently carried out instructions to the letter. I found a creamy purulent discharge of moderate quantity, conjunctiva slightly swollen and no evidence of ulceration. I gave guarded prognosis and inquired about the probable cause which was as before noted. I spoke about the necessity for the mother keeping up her nutrition, and suggested that if the milk should fail the course of the case might be unfavorably influenced. Ordered three per cent boric acid wash every fifteen minutes or longer; atropin-iodoform ointment, hydrastin collyrium, and had two per cent silver applications made by the physician for two weeks.

On the third day after I was called the mother developed fever and her milk stopped. Since that time to date of writing she has been subject to rises in temperature and rheumatic pains. A special examination has been made which reveals typical gonorrhea with discharge from the os uteri. The child was put upon Fairchild's peptogenic milk powder with sterilized milk, but did not digest same, large curds coming away in stools. Change was made to Nestle's food which was better borne, although the nutrition remained very poor, and it was subject to many attacks of colic for which general medication was given by the attending physician. About the thirtieth day of the child's age, although the discharge was very slight and cleansing treatment was necessary only every second or third hour, one cornea was noticed to have a pearl-like luster, and on the next day was seen to be infiltrated, the infiltrations converging from the limbus to the anterior pole of the cornea. The other eye soon followed in the

same course, the anterior epithelium for two weeks remaining intact, but then coming off like a piece of exfoliated epidermis. At the beginning of the infiltration, pyoktanin 1:1,000 was ordered dropped in the eye, two to five times daily, boric acid wash and iodoform-atropin ointment continued, and yellow collyrium stopped. On the seventh week both corneæ became staphylomatous. The child gradually grew weaker and died January 5th in the thirteenth week of its life.

Special points of interest in these three cases are:

1. The occurrence of corneal infiltration without superficial ulceration, followed by corneal staphylomata and leucomata with resulting blindness in cases of seemingly moderate degree in which a favorable, although guarded prognosis would customarily be given. The amount of conjunctival inflammation was not at all in proportion to the corneal disease. At no time were there pressure symptoms although in one case canthotomy was made.

2. Cases I and II have no gonorrheal history, and subsequent examination in the mothers by their attending physicians seem to negative this condition. Case III, although a fresh specific infection had but moderate inflammatory symptoms.

3. Cases I and II preserved the corneal epithelium practically intact, and case III kept it for seven weeks.

4. The exciting cause of the corneal malnutrition was, in the first instance, temporary disturbance of general nutrition due to intestinal trouble in the mother; in the second, premature birth and bottle-feeding, and in the other, marasmus from bottle-feeding.

5. Death from marasmus in cases II and III.

It is said that in the city of Milwaukee there are more children delivered by midwives than by physicians. The greater majority of blenorrheal cases coming to me have occurred where the former were employed for the accouchment. It seldom happens that I do not have under treat-

ment cases of this class, and sometimes there are several. Many are brought to me after corneal collapse, but the majority even of these recover with more or less vision. I have had previous cases of ophthalmia occurring in marasmic infants where the nutrition of the cornea was seriously affected, but these were attended by grave ulceration which had occurred before skilled advice was sought.<sup>7</sup> I cite these three cases with some diffidence, but believe that a conscientious report of this nature may perhaps be instructive as the extensive literature upon this subject is most generally about more fortunate cases and expresses more favorable views. Cases certainly appear that are properly attended, in which other factors than that of the specific inflammation obtain and which should modify our prognosis. Hinde<sup>1</sup> recognizes this when he says that floating pus microbes are present in the blood of many marasmic patients, and may be, in some cases, responsible for the *locus minoris resistentiae* within the ocular tissues.

It is a recognized fact that prophylaxis lessens the number of these cases; that the disease itself in some instances has been aborted; that its course in the great majority of cases is favorably influenced and blindness prevented by similar treatment as taken in the foregoing instances. Such sad cases may occur in the practice of any physician who may do his best without meeting with the kindly judgment awarded to me. Invidious criticism might arise if the public or profession believe that by proper treatment given sufficiently early blindness may in *all* cases be prevented.

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## ASTHENOPIA AND PERIPHERAL ABERRATION.

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IN the October number of the ANNALS there appeared an article from the pen of Chas. F. Prentice upon the "Iris, as Diaphragm and Photostat." In this the writer advanced the idea that, in a certain proportion of cases of eye pain, the source could be traced to the state of the pupil. It did not appear that the conclusions reached had been verified by clinical experience, but rested solely upon optical principles involved. In the hope of ascertaining how far the deductions of Prentice might be borne out in practice the writer undertook a series of experiments. In order to secure accuracy in every case examined the muscular balance was noted, and where the relation between the adductors and abductors did not bear at least the ratio of three to one (providing always that the abductive power did not fall below eight degrees) the case was excluded. The range of accommodation demanded was that accepted by Donders for the different ages and given in his work, "Accommodation and Refraction of the Eye." In short, the whole matter resolved itself into an examination of the condition of the pupil and the state of the refraction. In estimating the latter, the method of skiascopy, as perfected and taught by Dr. Edward Jackson, was the objective test relied upon. Not wishing to burden this paper with an enumeration of all the cases studied, I have ventured to insert but one or two typical of the conditions found.

The cases coming under observation easily arranged themselves into three classes, viz.: Those with large pupils and asthenopia; those with large pupils without asthenopia; and those with exceedingly small pupils. As illustrating, class one

is the case of Minnie M., 15 years of age, in poor health, having recently recovered from an attack of typhoid fever, menstrual function imperfectly performed, pupils under bright illumination 7 mm. in diameter, diminishing to 6 mm. in accommodating for 23 cm. Cannot go to school by reason of the pain in the eyes on studying. Vision,  $\frac{3}{80}$ ; muscular balance perfect and accommodation normal. After the instillation of a one-tenth per cent solution of scopolamin hydrochlorat vision fell to  $\frac{2}{40}$ . Keratometry gave .25 D., ax. 90°. Skiascopy showed the visual axis to be emmetropic shading off to - 2 at the extreme margin of the lens. No glass would bring the vision above  $\frac{3}{80}$ . The pin-hole disc alone, however, gave vision  $\frac{2}{20}$ . The interesting features here were the extreme peripheral aberration and the low visual acuteness relieved by the pin-hole disc. This case appears to confirm, in a remarkable degree, the views of Prentice.

Of the second class we need not go so into detail; they were all cases of emmetropia or weak ametropia presenting the additional condition of but slight peripheral aberration, never exceeding .50 D., and rarely more than .25 D. at the extreme margin, a still further confirmation of the views above expressed.

In the third class I found but one case and that was valueless, owing to the fact the patient had but a short time previous suffered from some nervous trouble probably of a cerebral nature.

In a discussion of this subject we are limited practically to class one. The case mentioned under this head is one of many coming, first, under the notice of the general practitioner, and finally making the rounds of the various specialists to receive treatment for a reflex pain in the head which, in view of the fact that the oculist may have reported the refraction and muscular balance to be normal, is set down as a condition of retinal hyperesthesia or an example of reflex pain from a disturbance of some distant organ. In this class retinal irritation from the continued presence of diffusion circles must be responsible for a large part of the result, or we must assume that the continual and vigorous contractions of the ciliary muscle directed to overcoming the peripheral aberration stands in the relation of cause. The physical facts set forth by Mr. Prentice have been so fully illustrated as to need no further comment. The sole question with the physiologist and oculist is the cause of the failure of

the iris to respond to the normal stimulus to contraction and the seat of the uneasy sensations connected with the eye. My belief is that these sensations are due to retinal confusion rather than to ciliary strain. In support of this idea is the case of Wm. C., 46 years of age, nervous temperament, much given to headaches and eye pains from reading or riding on railroad trains. He had an extensive collection of glasses prescribed in this country and in Europe varying from  $+ .75$  D. to  $+ 1.25$  D., and all of which had given him comfort, while at other times none were of the slightest benefit. Pupils varying, on some days widely dilated, and on others, contracted under the same degree of illumination. When the pupils are contracted he is fairly comfortable, but when dilated nothing relieves. Skiascopy gave  $- 1.25$  D. in the visual axis and  $- 1.75$  D. at the margin. In the first case cited the normal state of the refraction in the visual line negated the idea of ciliary strain unless the ciliary muscles suffered from the reflex demands of the aberrant margin. As there is no definite size that can be assigned to a normal pupil, the only way of determining the cause of an asthenopia after the exclusion of muscular anomalies and ciliary strain would appear to be a skiascopic test of that part of the dioptric apparatus which lies within the habitual pupillary area of the individual. Any marked difference in the refraction between the center and the periphery leading to grave suspicions if not certainty of retinal fatigue. If such failure to maintain "the proper relation between refraction, accommodation, illumination and freedom from aberration," (Prentice) be ascribed to the lack of retinal stimulus from ametropia and the consequent want of a sharp image upon the retina, then the rational treatment would be the correction of the refractive error; if due to a lack of power in the iris, then a different line of procedure must be adopted. Although the cases studied by me are too few to venture an opinion, yet the result lends color to the view that, in the vast majority, attention to both the refractive condition of the dioptric media and the other forces governing the iritic movements outside of retinal stimuli will be followed by the best results.

## "AUTOPHAKOSCOPY."

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IN No. 3 of Vol. 114 of *Annales d'Oculistique*, appears a paper by Dr. A. Darier, of Paris, on Autophakoscopy. No doubt all who read this interesting article, when it was finished, proceeded to do the very same thing that I did, viz.: Take a peep at their own lenses and corneæ, and watch the movements of the *muscæ volitantes* by the method therein described.

A view of the *muscæ* in one's own vitreous is, however, not such a striking novelty to all of us. Its appearance, when looking upon a clear white surface, is with myself, as with many others, an every-day occurrence. Of course the view that is obtained of them by the method described is perfectly satisfactory.

One can here study their form and size, as well as their movements, very leisurely and not have them hop out of sight, like "Paddy's flea," every time you attempt to "nail" them.

I have a very choice one in my right eye, of the necklace variety, that frequently intrudes when making an ophthalmoscopic examination. This, with a number of the ring species, were an endless source of amusement to me on shipboard, while on a recent trip to Europe. If reading or the games on deck become wearisome, I had but to look away towards the horizon and with a fillip of the eyes, summon these, my floating subjects before me, in all their variety of shape and size.

It is surprising what a vast amount of entertainment one can get out of such a simple matter, especially when the qualms of sea-sickness are upon you and that "far away" look comes more often to the eye.

In trying Dr. Darier's experiment, I followed very closely the directions he gave, and was able at the first trial to prove very satisfactorily to myself that I did view the striations of my own lenses, and observe the movements of the "physiologic floating bodies in the vitreous humor." Members of my own family, also several patients whom I directed to try the same experiment, were equally successful, especially in the observation of the movements of the *muscæ*.

These observations had nearly passed from my mind, or at least passed into that part of the mind that we make the receptacle of matters that we are not likely to call into use very often, when it was all brought to my notice again in a peculiar manner. The particulars of which I will relate.

One evening, while attending a lecture, my head was bowed and my chin rested upon the thumb of my right hand. In this position, my right eye, which was partially closed, was brought within three or four inches of a plain gold band worn upon the little finger of the same hand. As I gazed carelessly at a small luminous spot upon the convex surface of the ring, where the rays of light from an arc lamp that hung above and to my left met the polished surface, I suddenly became aware of the fact that I saw before me a counterpart of the bright, luminous disc which is seen when viewing a candle flame through a concave lens of forty diopters, as directed by Dr. Darier. From this moment the words that came from the lips of the speaker fell upon at least one pair of deaf ears.

For even though the bodily attitude may have simulated devotion the mind was far from it. In this particular my case was, doubtless, not an isolated or unique one among the audience. I became at once deeply absorbed in studying the miniature world before me. The lenticular striations were as distinct as I had ever seen them, while by a quick movement of the eyes from side to side, or by imparting a rolling motion to them, the graceful, undulating movements of the *muscæ*, as they tumbled and rolled across the luminous field were particularly noticeable.

The small drops of mucus and tears could also be observed as they passed slowly across the cornea, after each closure of the lids.

I have since repeated the experiment in the same manner in my office, sitting under a small incandescent lamp. Of course the effect is greatly intensified if the luminous disc is viewed upon a dark background.

My episode may be of no particular moment. My only excuse, however, for "rushing into print" with it is this: That inasmuch as this observation was made in such a peculiar manner and from rays of light reflected from a convex surface of an opaque substance, there might be in it a suggestion of greater possibilities, to some one who possessed the time and inclination to further pursue this interesting subject.

## CLINICAL MEMORANDA.

DIVERGENT STRABISMUS ASSOCIATED WITH HYPEROPIC  
APHAKIA IN ONE EYE AND SENILE CATARACT IN THE  
OTHER. PARALLELISM AFTER OPERATION.

By S. L. MCCREIGHT, M. D.,  
OF CHICAGO.

The following histories are of cases that presented themselves at the clinic of Dr. Casey A. Wood, Chicago Post-Graduate Medical School:

Mrs. J. A. P., 53 years of age. Family history good; never had any trouble with her eyesight until 1882. About this time she discovered that she had more difficulty in threading a needle than formerly. Objects did not appear as distinct as heretofore, and very frequently they seemed double. On account of the diplopia more than anything else she consulted an oculist in the year 1884, and was told that she had a cataract in the left eye. Glasses were prescribed and worn constantly, but with very little benefit to the patient. In September, 1888, the cataract had matured (V. = fingers at four feet) and the operation of extraction was performed after which the patient was enabled to tell the time by the watch. Sometime previous to this operation the right eye became similarly affected and grew gradually worse. During the summer of 1893, she consulted Dr. Wood, who discovered, in addition to a cataract in the left eye, that she had a divergent strabismus amounting to  $30^{\circ}$  on the perimeter. An operation for the cataract was advised and on October 29, 1895, it was performed without iridectomy with a very satisfactory result. Dr. Wood also operated on the left

eye for secondary cataract December 11, 1895. Vision was greatly improved in both eyes after this operation and the divergent squint began at once to improve and has continued until now; it is scarcely noticeable even for fixation of distant objects. At first she had marked diplopia, but is now able to fuse the double images without difficulty. The patient is wearing the following lenses with a good deal of satisfaction, but is not able to get distant binocular vision, although for reading she can:  $13.0^{\circ} + 1.00 + 13.00$  with R. V. =  $\frac{3}{8}$ ; L. E. +  $13.00 =$  V.  $\frac{3}{8}$ . For reading, 4 D. was added to the sphericals in each eye with which she readily reads Jaeger No. 1, with each eye separately.

#### UNILATERAL HERPES OF THE CORNEA.

H. L., 31 years of age, has for many years had frontal headaches, the result of acute rhinitis, but has never suffered from any eye disease. Two months ago he began to have "neuralgia" of the left side of the head and over the left eye. After three days of pain in the eye, with photophobia, scleral redness and a feeling of heat about the orbit, he noticed that the vision of his left eye was not as good as usual. He then began to use a liniment of chloroform, camphor and Jamaica rum. This was applied to the forehead and eyelids, with the effect of making matters still worse. The pain in the eye, now accompanied by lachrymation, grew worse. Six weeks after the first attack of neuralgia he presented himself at the clinic. He had a well-marked herpetic eruption following the course of the left supraorbital nerve and extending from the eyebrow to the vertex. The half-dried and broken vesicles alternated with reddened pits.

The eye is inflamed, the ball being red and injected. There is marked ciliary congestion. On the border of the left upper lid and upon the palpable conjunctiva are small abrasions. The muosa of the lid is much swollen. The superficial epithelium of the cornea is irregular and the window reflex is broken in passing over it. The vision of the right eye is  $\frac{3}{8}$  — and Jaeger 1; that of the affected eye is  $\frac{2}{10}$  — and Jaeger 2. After treatment for a month a faint, almost central scar can be seen in the left cornea. V. =  $\frac{3}{8}$  — and Jaeger 2.

RETINITIS PIGMENTOSA WITHOUT NIGHT BLINDNESS—  
RECURRENCE OF THAT SYMPTOM AFTER  
OPTICAL IRIDECTOMY.

Miss M. O., 25 years of age, domestic, has always had poor vision ever since she can remember, and became noticeably worse in the past two years. She is able to attend to her household duties, but can not read or do any near work. Her parents are cousins, and one brother has a typical retinitis pigmentosa. When first seen her vision was, in either eye, fingers at eight feet. Patient has anterior polar cataract in both eyes, with involvement of the nucleus and lateral nystagmus, but gives no history of recent hemeralopia. November 13, 1895, optical iridectomy was performed on both eyes by Dr. Wood, which resulted in marked improvement of vision. Now that light is again admitted to the macular regions, she notices very plainly a reduction of vision on entering a dark hall or when night comes on.

The ophthalmoscope shows the usual fundus change of retinitis pigmentosa and her visual fields are contracted to within  $10^{\circ}$  of the fixation point.

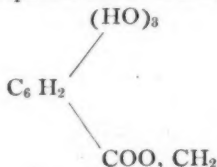
# ABSTRACTS FROM FOREIGN CURRENT OPHTHALMOLOGICAL LITERATURE.

By CASEY A. WOOD, M. D.,  
OF CHICAGO.

GALLICIN IN OCULAR THERAPEUTICS—THE OCULAR COMPLICATIONS OF SMALLPOX—THE EMPLOYMENT OF ARGENTAMIN IN EYE DISEASES—STERILIZATION OF THE CONJUNCTIVAL SAC—ON THE PHYSIOLOGICAL ACTION OF ARECOLIN, A NEW MIOTIC ALKALOID—ICHTHYOL IN CERTAIN FORMS OF OCULAR DISEASE—RIPENING OF IMMATURE CATARACT BY THE DIRECT METHOD—CORNEAL TRANSPLANTATION—THE TREATMENT OF SIMPLE CHRONIC GLAUCOMA.

## GALLICIN IN OCULAR THERAPEUTICS.<sup>1</sup>

This is a compound obtained by heating a solution of gallic acid with methylic alcohol in the presence of gaseous hydric chlorid or concentrated sulphuric acid. It is represented by the formula



and is thrown down as a whitish, granular and very light powder. It crystallizes from *methylic alcohol* as anhydrous rhombic prisms, and from water in the form of feathery needles. It liquifies at 200° C., readily dissolves in warm water, in methylic and ethylic alcohols and in common ether.

<sup>1</sup> Bocci. La Gallicina in terapia oculare, p. 31. [This short translation, together with the following abstracts, is selected from the papers read before the Fourteenth Annual Congresso dell'Associazione Ottalmologia Italiana, held at Venice the 26th to 29th of August. They were recently published as a supplement to the *Annali di Ottalmologia*, fasc 4.]

Gallicin in many respects resembles resorcin and pyrogallol, both of which are useful agents in treating catarrhal affections of the mucosæ and skin, but it is greatly to be preferred to the latter remedy, since it is non-poisonous. It has already been used by Mellinger in both the catarrhal and follicular forms of conjunctivitis, in eczema of the lids, in phlyctenular and pustular kerato-conjunctivitis, in simple keratitis and in corneal ulcer with hypopyon. It is commonly applied as powder to the eyeball with a camel's hair brush once or twice a day.

In the writer's clinic it is used in various forms, sometimes in solution, sometimes in powder, occasionally as an ointment.

In the form of powder it acts as a foreign body and produces pain, although the irritation ceases at once when cold applications are applied to the eye.

Six, eight and ten per cent solutions in warm water are of a beautiful rose color, are well borne by patients and give but little pain.

It acts promptly and with good results in the ocular affections above mentioned as well as in ulcers of the cornea accompanied by infiltration of that tissue. It does not seem to affect the action of mydriatics or the miotics.

As an ointment it has been employed to best advantage in two, three and five per cent mixtures with neutral vaselin. Excellent results may be obtained with these in all those cases where one would use the yellow oxide, *e. g.*, in palpebral eczema and in the various forms of marginal blepharitis. It is a useful and not very painful agent when employed in massage of the cornea.

#### OCULAR COMPLICATIONS OF SMALLPOX.

The author<sup>2</sup> had charge of the lazaretto of the Abazia in Venice during the widespread epidemic of 1889-90, when 142 patients out of a total of 1,972 (about 9%) presented various lesions of the ocular structures. Conjunctival affections were the most frequent of all, one-half, or seventy, developing pustular conjunctivitis; three had purulent conjunctivitis; sixteen, phlyctenular conjunctivitis, and three diphtheretic conjunctivitis; twenty-seven had simple corneal ulcer, two serpiginous ulcer; eight, iritis; two, iridochoroiditis; two, iridocyclitis; five, ciliary injection, with photophobia, and four, purulent dacryocystitis. Ten eyes were lost.

<sup>2</sup> Gambarotto. *Complicazioni oculari nel varolo*, p. 40.

## THE EMPLOYMENT OF ARGENTAMIN IN EYE DISEASES.

This remedy<sup>3</sup> is a double phosphat of silver and ethyldenediamine, and is made by adding ten parts of argentic phosphat to ninety parts of a ten per cent watery solution of ethyldenediamine  $C_2H_4(NH_2)_2$ .

The solution has an alkalin reaction and does not give a precipitate with solutions of sodic chlorid or albumin, but, like all silver preparations, is decomposed by light, and should accordingly be kept in the dark.

Schaeffer (*Wien. klin. Wochenschrift*, 1894, No. 12) has experimented with this compound from the standpoint of the bacteriologist, and he declares it to be a more potent antiseptic than the nitrat or any other salt of silver. He gives as a reason for this superiority the fact that solutions of argentic nitrat form insoluble compounds with the albumin and sodium chlorid of the tissues and so limit its action to the superficial layers of the mucosæ. Schaeffer applied a silver nitrat and an argentamin solution to two pieces of liver. After the application of the former the surface of the liver was immediately covered by a layer of brown sulphid of silver, while the underlying parts were unaffected. The argentamin, on the other hand, penetrated at once to the deeper layers. Schaeffer proposed this remedy, and has had good results with it in urethral blennorrhæa. He uses it in the strength 1:5,000 where the anterior portions of the canal are affected and 1:1,000 in posterior lesions.

Albertazzi and Pardo have confirmed these observations.

Levy claims good results from its use (as lavage) in affections of the stomach.

In the Ophthalmic Clinic at Turin it has been used with the best results in chronic diseases of the lacrymal sac and of the nasal duct. It is used for this purpose, with Anel's syringe, in the proportion of 1:2,000—3,000. Solutions of this strength are not painful, they do not irritate, they do not cause sneezing and their action on the purulent discharges from the duct and sac is very prompt. After a short period of treatment the fluid assumes a mucous quality and becomes thin and transparent.

Argentamin has also been employed in the treatment of acute catarrhal conjunctivitis in the strength of 1:200, such a solution being well borne and its action very rapid and satisfactory.

<sup>3</sup> Bocci (Turin). *L'Argentamina in terapia oculare*, p. 29.

The first effect of strong applications is to augment, but shortly afterwards to diminish the mucous secretion. The author thinks that, from his experience, argentamin is well worth a trial in ophthalmia neonatorum, although he has not had sufficient experience of it in this disease to report upon it.

#### STERILIZATION OF THE CONJUNCTIVAL SAC.

The author<sup>4</sup> has made bacteriological examinations of thirty-five eyes operated on after the use of (formol) formalin, 1:1,500, as an antiseptic. He made cultures of the sac contents before and after each irrigation, and compared the results with those following lavage of the eye in exactly the same way, with indifferent (aseptic) solutions. He concludes as follows: (1) When the antiseptic was applied before the operation, after the method of Morax, carrying out at the same time the most scrupulous asepsis, there was a numerical reduction of the colonies in ninety cases—unaffected in twenty-four per cent. (2) Under vigorous asepsis and irrigation with neutral carbonat of sodium and sterilized water the reduction did not reach sixty per cent. (3) With asepsis and antiseptis practiced not only before the operation but on several previous occasions, and particularly with the use of compresses the reduction is in ninety-eight—unaffected in twelve per cent. He lays special stress upon the technique of the examination and points out the advantages that follow the use of a liquid culture medium. He employs bouillon mixed with gelatin, places the patient in a horizontal position and applies the blepharostat. In this way there is complete contact of the culture fluid with the whole conjunctiva, and the test can be made before and after each lavage with the same amount of liquid.

Finally, in opposition to the view of Stroheim, Bach and Morax, irrigation with a physiological solution of common salt, which acts mechanically, does not produce the effects of an accurate antiseptis combined with a thorough asepsis.

These antiseptic precautions should be taken not only immediately before the operation, but for several days preceding it. A wet compress applied twelve hours before operation renders signal service on account of its action upon the skin, the cilia and the free borders of the lids.

<sup>4</sup> Bardelli. *Sulla sterilizzazione del sacco congiuntivale*, p. 13.

Absolute sterilization of the conjunctival sac we can not have, but in the great majority of cases the operator is secure from danger of infection since the conjunctival sac rarely contains pathogenic germs.

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ON THE PHYSIOLOGICAL ACTION OF ARECOLIN, A NEW  
MIOTIC ALKALOID.

Lavagna,<sup>5</sup> while investigating the physiological effects of the salts of arecolin, found them to possess very energetic, though temporary, miotic qualities. One drop of a one per cent solution produced in five minutes a well-marked contraction of the pupil which lasted seventy minutes. This was accompanied by a spasm of the ciliary muscle similar to that set up by eserine. It also lowered the tension of glaucomatous eyes treated by it. Lavagna recommends its employment in all cases where a thorough, but temporary miosis is desired.

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ICHTHYOL IN CERTAIN FORMS OF OCULAR DISEASE.

Luciani<sup>6</sup> speaks enthusiastically of the ammoniacal salt—the diammonic-ichthyol sulphonat—in the strength of a one per cent to ten per cent solution in sterilized water and as an ointment in the proportion of two and one-half to ten per cent with purified vaselin. He has used it in the following eighty-five cases: marginal blepharitis, thirty-two; phlyctenular conjunctivitis, ten; conjunctivitis with lymphatic keratitis, thirty; simple conjunctivitis, seven; chronic catarrhal conjunctivitis with pannus, two; chronic conjunctivitis with ectropium, two; infective kerato-iritis with hypopyrn, one; recurrent episcleritis, one.

In all the cases of blepharitis, some of them very severe and of long standing, he practiced epilation and the removal of the crusts at the base of the cilia, carefully washed the edges of the lids with cotton soaked in a strong solution of ichthyol and disinfected the conjunctiva and conjunctival sac with the same collyrium; finally he applied to the palpebral margins the ointment, which varied in strength according to the requirements of

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<sup>5</sup>Lavagna. *Azione fisiologica dell'Arecolina, nuovo alcaloide miotizzante*, p. 36.

<sup>6</sup>Paolo Luciani (Spezia). L'ittiolio in alcune forme di malattie oculari. *Annali di Ottalmologia*, Anno XXIV, fasc 5, p. 501.

the case. This was repeated every evening, but substituting, as the patient improved, plain boiled water for the ichthyol solution. The results were very satisfactory in every instance. In a short time the superficial ulcerations cicatrized; the eyelashes appeared more healthy and the epidermis once more grew on the lid margins.

In two cases of ectropium of the lower lid, complicated with chronic conjunctivitis and ulcerative blepharitis, this treatment not only cured the disease but sensibly reduced the malposition of the lid.

The cases of chronic catarrhal conjunctivitis with pannus occurred in two old persons who for many years had suffered from the disease, vision being much reduced as the result of corneal opacities. These were treated by repeated irrigations with ichthyol solution followed by daily massage of the globe with the stronger ointment. The secretions soon became normal, the conjunctival hypertrophy was lessened and the general congestion disappeared. In one patient the improvement was so great that he was able to resume his former occupation.

In the other instances, especially in those patients of a lymphatic habit, the author also obtained extremely good results. He considers ichthyol, in view of its solubility in water and the intimate mixtures it makes with vaselin and other excipients, to be one of the most valuable therapeutic agents which the oculist possesses. He thinks the eye tolerates this remedy in such relatively large doses because of its analgesic action, and that it will prove to be as useful to the ophthalmologist as it now is to the dermatologist and gynecologist.

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#### RIPENING OF IMMATURE CATARACT BY THE DIRECT METHOD.

This writer<sup>7</sup> claims that in the year 1884, while in charge of the ophthalmic department of the Italian Hospital in Buenos Ayres (when Förster's method for the ripening of immature cataract was under consideration) the idea of direct massage of the crystallin first occurred to him.

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<sup>7</sup>Massimo Rinaldi (Buenos Ayres). Maturazione della cataratta per mezzo del massaggio praticato direttamente sulla cristalloide. *Annali di Ottalmologia*, 1895, p. 479.

Before attempting it upon the human subject he made the experiment upon rabbits, and the results were so satisfactory that he operated upon a patient on December 11, 1894. This case was one of bilateral immature nuclear cataract. The man was able to find his way about alone and could distinguish large objects. The operation was performed on the right eye and was a marked success; in twenty-four hours the cataract was completely opaque. On January 1, 1895, he extracted the cataract, and two weeks subsequently he proceeded to massage the remaining cataract which was also removed in about twenty days. Thus, inside of two months the patient was able to leave the hospital and return to his ordinary occupation.

Dr. Sasso, at that time assistant in the ophthalmic department and now chief surgeon to the hospital, published the history of this case in his thesis (*maduracion artificial de la catarata—masage del cristallino sobre la cristaloides. Nuevo procedimiento*. Buenos Ayres, 1887).

Of the last seventeen cases of direct massage performed between 1893 and 1895 the author has not had a single failure, and the procedure was not followed or accompanied by any untoward accident. He has operated altogether in ninety-three instances, seven of which are recorded by Sasso in his Inaugural Thesis.

To still further emphasize the freedom from danger which the author claims for his method he gives the history of two recent cases of complicated cataract where danger might reasonably be expected from attempts to triturate the anterior capsule.

The first patient had an immature nuclear cataract in the right eye with several posterior synechiæ, the result of an old iritis. The left eye showed incipient cataract without adhesions. He did the usual massage in the right eye, directing the spatula between the synechiæ, at the same time breaking down such adhesions as interfered with a free use of the instrument. At the end of four days the lens was entirely opaque and there was not the least peri-corneal injection.

The second case, in a boy, 7 years of age, was one of trauma, a penetrating wound of the ball from the prong of a common table fork. There was a circumscribed cataract with adhesions of the iris to the capsule. The patient was chloroformed and the lens massaged forty-two days after the accident. Twenty days subsequently the lens was extracted entire and with good results.

These two cases are given as an answer to criticisms of this procedure made especially by Parisotti in Rome, and Armaignac, of Bordeaux.

Sasso mentions a slight ciliary injection following two of the earlier cases when direct maturation was employed, but the writer contends that this was not the result of the operation alone, and the subsequent extractions were in both instances successful.

Armaignac (*Révue Clinique d'Oculistique*, 1887,) has spoken of this massage as dangerous and said he preferred to it the operation on unripe cataracts, afterwards trusting to irrigation of the anterior chamber for the removal of the soft matter.

Parisotti (*Riforma Medica*, January 11, 1889,) has given as his reasons for declining to do the direct operation the possibility of luxation of the lens and the danger of injuring the iris from uncertain movements of the spatula or of the patient's eye. The author objects to *a priori* conclusions and arguments, and thinks that the experience of an operator who has had always good results must outweigh those of one who has seldom or never done the operation.

Rinaldi gives a historical review of operations for the ripening of immature cataract, and concludes by describing in detail his own method which he commonly practices without previous or subsequent iridectomy. The eye being disinfected with bichlorid solution and the instruments with formol, the eye is anesthized by means of tropa-cocain and nitro-glycerin, a mixture that does not produce mydriasis, dilatation of the pupil not being desirable. The globe is fixed with the usual forceps held in the left hand, a keratome is entered in the median line 2 mm. from the sclero-corneal junction and an opening 3 mm. wide is made. A spatula of tortoise shell is held like a pen, as horizontal as possible in the right hand. The blade of the spatula should be flexible so that it may be adapted to the curve of the lens. It should be entered carefully, and delicate but firm movements made from left to right and *vice versa* for several minutes. After removal of the instrument the eye should a second time be irrigated with boric acid solution. A bandage is applied for three or four days. The cataract should not be extracted earlier than twenty days after the massage.

[Rinaldi should, as a matter of justice, have referred to the work of Dr. Boerne Bettman, of Chicago, who published an

account in 1887 of a similar procedure. Indeed, it is a question whether Bettman's publication does not antedate that of Sasso. C. A. W.]

#### CORNEAL TRANSPLANTATION.

The writer<sup>8</sup> has operated altogether in thirty cases. These included (1) two instances of parenchymatous keratitis where the resulting opacity was so marked that vision was practically nil. In one of these three, and in the other eight years had elapsed since the inflammatory attack had subsided; (2) cases of leucoma adherens where there was no chance of doing an effective optical iridectomy; (3) total staphylomata not amenable to operation; (4) certain cases of partial staphylomata, generally the result of the healing of scrofulous ulcers, which showed as bulging, rather thin, transparent scars to which the iris is attached. These are, especially, the cases in which keratoplastic operations are said to be followed by increased tension, fistula of the cornea, infection, etc.

In fourteen instances rabbit's corneæ were used for the transplantation, in eleven enucleated human eyes, and in a few instances dog's eyes and the corneæ of recently dead-born children. Of the thirty cases eleven did not heal, but non-success did not appear to be the fault of the material used; indeed, failure in each instance could invariably be traced to mechanical causes. The writer believes that the adult human cornea forms the best transplantation material, and recommends the employment of the thin rabbit's cornea only in children or where nothing better is to be had.

The diameter of the graft varied from 3 to 7 mm., the best results being obtained from those measuring 4 to 5 mm. Very small ones soon become cloudy while the large ones, in spite of sutures and conjunctival flaps, easily got out of place. The greatest care should be taken in those cases where there is an adherent iris, that it should be snipped off level with the edges of the corneal wound.

The result in almost all cases was that after a few days the graft became cloudy at its margin, the opacity spreading to the

<sup>8</sup>Prof. Ernst Fuchs. Ueber Keratoplastik. Vorgetragen in den 27ten Section der Versammlung deutscher Naturforscher und Aertze. Review in Hirschberg's *Centralblatt für pht. Augenheilkunde*, November, 1895, S. 340.

center until the whole piece became whitish. New vessels also formed in the flap to complete the opacity. Now and then the transplanted portion cleared up after a time, but this was uncommon. The opacity nearly always showed itself after the third day; in six cases not until the tenth day, while in one case the flap remained quite clear until the fifteenth day. The newly-formed vessels did not usually appear until several days or weeks after the cloudiness was observed in the graft, and then it proceeded exactly as in the vascularity of parenchymatous keratitis. Finally these new channels partially or entirely disappeared, the graft became more transparent and the line of demarcation between the true and the transplanted cornea was represented by a sharply defined and very white border.

Fuchs, in opposition to von Hippel, does not refer the clouding of the graft to the imbibition of aqueous, but thinks it is one of the results of the healing process that must necessarily follow the attachment of the flap to the edges of the corneal wound. A transparent graft is an ununited graft. Organic union begins with cell proliferation at the margin of the corneal wound followed by cellular excursions and vascular extensions from the former into the substance of the flap. In spite of Wagenmann's experiments on rabbit's eyes, fair results can follow this operation only when the cell multiplication and the vascular projections do not reach the center of the graft, or where there is a late subsidence of both these processes and a consequent clearing up of the cloudy cornea.

As to definite visual results it may be said that not a single graft remained clear. The two cases of parenchymatous keratitis that were under observation for nearly two years exhibited the most satisfactory vision. One of these had V = fingers at 1 —  $1\frac{1}{4}$  m. The second had, when discharged, V = fingers at  $1\frac{1}{4}$  m., and could do coarse work until the eye became almost blind from an acute attack of some kind accompanied by headache.

Of twelve cases of transplantation done in thick but flat scar tissue, only two remained somewhat transparent. One of these patients is able, a year and a half after operation, to go about the streets alone; the other was able to count fingers when leaving the hospital at 15 cm.

In eight cases of total staphyloma one graft alone continued to be transparent for a month, when, under an increase of ocular

tension it became completely opaque. In another case the transplanted portion became cloudy, but the cornea did not again bulge. In all the other instances the bulging became as marked as before the operation. In five of the eight cases, although the grafts became opaque, they "took" nicely and resisted well the intra-ocular pressure.

To sum up, the results, so far as the attempt to restore the damaged cornea and obtain improved vision is concerned, were not encouraging. In a few cases there was a decided improvement, but in the great majority of instances failure. In partial staphyloma this procedure would seem to offer (in addition to the possibility of better vision) more chances of checking the progress of the disease than any other method such as excision, cauterization, iridectomy, etc. Enough has been gained to encourage us to cultivate the method and to publish the results.

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#### TREATMENT OF SIMPLE CHRONIC GLAUCOMA.

Acute glaucoma, accompanied by inflammatory signs and symptoms, is successfully treated by iridectomy. It is, however, entirely different, says Abadie,<sup>9</sup> with the simple chronic form whose progress is slow but progressive, and where the increased intra-ocular tension does not give rise to such marked symptoms. Gradual contraction of the visual field and loss of vision to blindness are the only functional signs of this disease.

Until within late years it was incurable. None of the methods found to be of value in the acute variety—iridectomy, scleratomy, etc., gave more than temporary relief. In the end the tension increased and blindness finally supervened. To-day, however, we possess the means of curing this serious disease which is far from being rare among persons of a certain age. This curative agent is eserine or pilocarpin, used as a collyrium, regularly and systematically, in the strength of one per cent, one-half per cent or one-quarter per cent, according to the tolerance of the individual.

It was not until 1877 that Laquer, of Strasbourg, discovered this anti-glaucomatous action of eserine. Previous to that time it had been employed to quiet acute attacks of the disease, but

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<sup>9</sup> Ch. Abadie. Traitement du glaucome chronique simple. *Archives d'Ophthalmologie*, November, 1895, p. 663.

the value of its steady and long-continued employment in the chronic form of glaucoma was not realized until then. Cohn, and more recently, Rochon-Duvigneaud have reported cases where marked success followed its use in this manner.

The writer recommends, in addition to the long-continued installation of eserin or eserin plus pilocarpin solutions, the exhibition internally of potassic bromid combined with quinin sulphat. For a month he gives a daily dose of 1 to 2 grammes of the former drug, and every other day a cachêt containing from 30 to 50 *ctgr.* of quinin. The miotic collyrium is instilled once a day. At the end of a month medication is suspended for four out of eight days, provided the tension continues to be normal, and this is to be continued indefinitely if required.

# ABSTRACTS FROM AMERICAN AND ENGLISH OPHTHALMIC JOURNALS.

BY CHARLES H. MAY, M. D.,  
OF NEW YORK.

## THE INFILTRATION METHOD OF ANESTHESIA IN OPHTHALMIC PRACTICE.

H. V. Würdemann, M. D., Milwaukee, Wis., (*Journal of Am. Med. Ass'n*, November 16, 1895). The writer substantiates the statements made in a previous communication of conclusions obtained (*Journal of Am. Med. Ass'n*, December 29, 1894) by following out the line of experiments instituted by Schleich, of Berlin. These experiments referred to the anesthetic properties of water and its application in surgery. Schleich found that a 0.2 per cent solution of sodium chlorid, used cold, injected into (not beneath) the skin, rendered operation painless.

"The anesthetic drugs, cocain, carbolic acid and morphin, have a special characteristic, *i. e.*, their addition in very small quantities to the 0.2 per cent salt solution prevented the paresthesia incident to injection of simple salin solution, and the infiltration of inflamed or hyperesthetic areas could be made without pain. The following formulas are advocated by Schleich:

R

Cocain mur.....	.20
Morph. mur.....	.025
Sod. chlor.....	.20
Aq. dist.....	ad 100

- M. Sterilisat. adde sol. ac. carbol. 5 per cent gtt ij.  
S. Solution No. 1, strong. For operation upon highly inflamed or hyperesthetic areas.

R

Cocain mur.....	.10
Morph. mur.....	.025
Sod. chlor.....	.20
Aq. dist.....ad 100	

M. Sterilisat. adde ac. carbol. 5 per cent gtt ij.

S. Solution No. 2, medium. For most operations.

R

Cocain mur.....	.01
Morph. mur.....	.005
Sod. chlor.....	.20
Aq. dist.....ad 100	

M. Sterilisat. adde sol. ac. carbol. 5 per cent gtt ij.

S. Solution No. 3, weak. For superficial operations upon nearly normal tissues.

"The 'keeping' qualities of these solutions are improved by the addition of a few drops (gtt iij) of a 5 per cent solution of trikresol, as recommended by Parke, Davis & Co.

"At my request, Parke, Davis & Co., of Detroit, Mich., have prepared tablets, triturates and compressed tablets, from which these solutions may be extemporaneously made by dissolving one tablet in 100 cubic centimeters (℥ iij) of distilled or boiled water. These will be found convenient in practice.

"All are to be kept strictly sterile; glass stoppers or scorched cotton, such as are used in bacteriologic experiments, for the bottles; small quantities to be poured out into smaller vessels for each operation. Just before operation the solution should be cooled by laying the bottle containing it on ice. The common form of hyperdermatic syringe, with the finest of needles, is all that is usually needed. \* \* \* The discovery of these truths, so valuable for the question of local anesthesia, is due simply to a slight change of method, the application of the solution within and not under the skin. The anesthesia is caused by the replacement of the normal fluids of the tissues by a fluid of less specific gravity (the water) which causes anemia, compression and cooling, producing thereby a temporary paralysis of the nerve filaments. The pain of the infiltration of the indifferent solutions is abolished by the minute doses of narcotic drugs.

"It is, perhaps, well here to go into the technique of the production of local anesthesia by this method. The field of operation is made aseptic in the usual manner. Having the

required formula, the solution aseptic and cold, we fill the sterilized hyperdermic syringe; pinching the skin slightly between the skin and forefinger of the left hand, the needle is passed obliquely under the epidermis to the papillæ, intra-cutaneously, until the lumen is fully inserted. A few drops are then injected, thereby producing a white, elevated wheal, the infiltration extending throughout the whole thickness of the skin. There is immediate and complete anesthesia throughout the extent of the infiltration, which lasts from ten to twenty minutes, according to the density of the tissue so edematized. The needle is then reinserted at the periphery of the wheal and the area infiltrated to the required extent and depth. No tissue offers any deviation from the dictum; every structure is made anesthetic that can be artificially edematized; this holds good for skin, mucous and synovial membrane, periosteum, fascia, muscle, lymph-glands, nerves, viscera and even bone. \* \* \* For obvious reasons this method is applicable only to operations in our practice upon the eyelids, etc. The resultant edema would interfere with most operations within the orbit, such as enucleation.

"However, I bring the subject to workers in ophthalmic surgery, believing it will be an advantage to the ophthalmic surgeon for most operations in which instillation of cocain is inapplicable, but which may be deemed too trivial for a general anesthetic and yet are attended with considerable pain. In my practice it is in daily use for chalazia, tarsal tumors, opening of abscesses and plastic operations. For most office operations the Schleich method is an invaluable contribution to our therapeutics. It should do away with the injection of dangerous solutions of cocain, and take the place of general anesthesia for many operations."

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#### PROGNOSTIC SIGNIFICANCE OF ALBUMINURIC RETINITIS.

E. Oliver Belt, M. D., Washington, D. C., (*Journal of Am. Med. Ass'n.*, November 2, 1895). The writer collected the records of 419 cases of albuminuric retinitis from ophthalmologists throughout the country. "The time allowed was too short for many to look over their records, and many had not kept trace of the patients after referring them back to the family physician, but enough cases were reported to show that the

duration of life is longer among private patients, and that renal affection is immediately influenced by hygienic surroundings. However, the number of cases surviving two years was disappointingly low, and the consensus of opinion seems to be that nearly all prove fatal in less than two years.

"From all the statistics I have been able to find we get the following results: Cases in private practice, 155; of these 62% died within one year, 85% in two years and 14% lived more than two years.

"Hospital cases, 77; of these 85% died within one year, 93% in two years and 6% lived more than two years.

"Mixed cases, 187; of these 65% died within one year, 93% within two years and 6% lived more than two years.

"Total number of cases, 419; of these 72% died within one year, 90% within two years and 9% lived more than two years."

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#### THE STATISTICS OF TRACHOMA.

Dr. E. VanMillingen, Constantinople (*Annales d'Oculistique*, English edition, September, 1895). The writer was charged "with the task of gathering documents relative to forming a statistical table of trachoma." The disease is met with everywhere—"as well in polar circles as in temperate and equatorial zones." He gives a table showing the relation existing between the frequency of trachoma and the social and intellectual conditions of various peoples, and also the frequency in relation to the population in different countries. He finds that the number of trachomatous persons is in proportion to the number of illiterate. "The high proportion of trachoma in Galicia, Holland and Roumania should be attributed to the great number of Jews, among whom this disease has always been very extensive, not from any racial predisposition, but rather on account of their lack of hygiene and cleanliness, and on account of their more or less Asiatic habits. Jews of the well-to-do class suffer no more from trachoma than the well-to-do classes of other nationalities.

"Two factors are indispensable to the propagation of trachoma: (1) *Contagion*; (2) *defective hygiene*. Contagion alone is not sufficient to produce an extensive epidemic of the disease; it must be seconded by bad hygiene, uncleanness, crowded living and a sedentary life. Continual change of place

and air kills epidemics of trachoma. Uncleanliness and crowded living seem to increase its virulence." He gives the letters received from all parts of the world in reply to his inquiries on the subject; from the United States there are two, one from Knapp, New York, and the other from Howe, Buffalo, N. Y. Dr. Knapp writes as follows:

"1. Trachoma is very common in New York.

"2. It is principally the poor class which is affected; the majority are Jewish immigrants from Poland and Russia.

"3. The acute form is rare, season has no influence on it.

"4. In my opinion trachoma may be (a) non-contagious: *Trachoma simplex*, infiltration of hygiene granules which may be thickly disseminated through all four lids of an individual without the slightest inflammatory symptoms. Radical expression, best performed by the aid of the forceps with cylindrical rollers, cures these cases without the use of collyrium or crystals of sulphat of copper, etc.; or (b) contagious: *Trachoma complicatum sive consecutioum* arising from catarrhal or blenorrhoeic conjunctivitis. The cure of this form requires the use of chemical agents after mechanical treatment. This form is much more rebellious and produces more cicatrices than the simple form.

"5. Sex has no influence on it.

"6. Negroes are only exceptionally affected."

Dr. VanMilligen's conclusions are as follows:

"1. Trachoma is an infectious and contagious disease which predominates in uncivilized countries and tends to disappear with the progress of civilization and of hygiene. Hygiene and cleanliness are the best preservatives against trachoma.

"2. Trachoma is not influenced by altitude, it may spread wherever the people are uncleanly and live in poverty, quite as easily at altitudes from 1,000 to 5,000 meters as on plains.

"3. All races are equally susceptible to the virus of trachoma. An immunity for certain races does not exist."

LIGHT—THE OINTMENT OF THE YELLOW OXID OF  
MERCURY AND THE OINTMENT-POTS  
IN COMMON USE.

Dr. S. Holth, Norway (*Archiv. of Ophthal.*, October, 1895). The writer calls attention to the fact that the ointment of the yellow oxid of mercury decomposes very readily. "A change

takes place after a short period, sometimes at the end of a few days; as a result, there is a grayish discoloration which, becoming darker finally changes to black. Altered in this manner, the ointment not only suffers in appearance, but though possibly harmless, it is less potent, and it may even be entirely useless. If its use be limited to a few days, or if it be freshly prepared every day for use in clinics, there will be practically no decomposition; but, as ordinarily prescribed to be applied at home, for a considerable period of time, this change is an objectionable feature."

The writer conducted a series of experiments for the purpose of ascertaining the cause of this decomposition. His results agree with the statements found in text-books of chemistry: That the red and yellow oxids of mercury are reduced through the influence of light. They justify the following conclusions:

1. Decomposition of the ointment of the yellow oxid of mercury which shows itself in grayish discoloration is not due to chemical changes produced in the ointment-base, but is "dependent entirely upon the reducing effect of light passing through the more or less transparent walls of the ointment-pots in ordinary use;" violet light probably exerts the most effect in this direction.
2. This decomposition is not influenced by temperatures between  $0^{\circ}$  and  $30^{\circ}$  C.
3. It is not caused by access of air.
4. Any ointment-pot may be used if kept in a dark place.
5. The use of absolutely opaque pots, provided with similar covers, is the most practical way of avoiding decomposition.

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#### FORMALIN AS A PRESERVATIVE AGENT FOR EYE SPECIMENS.

William H. Wilder, M. D., Chicago, Illinois (*Journal of Am. Med. Ass'n.*, November 9, 1895). After pointing out that the use of some of the older hardening and preservative agents is accompanied by certain disadvantages for eye specimens, the writer speaks of formalin as one of the most valuable preservative agents which we possess. "Formal or formalin is an aqueous solution of formaldehyd; the latter in its original state being a gas resulting from the oxidation of methyl-alcohol. As obtained in the market, this solution is a colorless neutral

liquid with a specific gravity of 1080 to 1088, having a pungent penetrating odor and containing forty per cent of formaldehyd. It is miscible in all proportions with water so that solutions of different strengths can be readily made. The specimens exhibited here were hardened in a five per cent solution made by using one part of formalin (Schering) and eight parts of water. This strength has seemed to me the most useful, although a weaker solution may be used also with success.

The method of procedure is, in brief, as follows: After washing the blood from the enucleated eye with ordinary water, it is placed at once in a bottle containing two or three ounces of the five per cent solution where it remains for a few days. It will then be found hard enough to bisect. In case the eyeball is filled with a tumor or a mass of exudate it can be cut with a thin razor almost as easily as one would cut an apple, but if the vitreous is present, either in the normal or fluid condition, it is best to freeze it so that in cutting the relation of the delicate internal structures may not be disturbed and the lens dislocated. The part that is to be preserved entire, after thawing in tepid water if it has been previously frozen, is then placed twenty-four hours in a thirty-three and one-third per cent solution of glycerin and water, and then for an equal length of time in a fifty per cent glycerin-water solution. It is then ready for mounting in glycerin jelly after the method of Priestley Smith described in the *Ophthalmic Review*, 1884."

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#### ACUTE COCAIN POISONING.

M. V. Ball, M. D., Philadelphia, Pa., (*Maryland Med. Journal*, November 16, 1895, and *Med. and Surg. Reporter*, November 16, 1895. The writer reports a case of cocain poisoning, with recovery; 18 grains of the alkaloid had been taken; morphin and strychnin were used. "The literature on cocain intoxication, though widely scattered, is, however, quite extensive. Mattison, of Brooklyn, and Germain See, of Paris, have each reported, in 1892, two hundred and more cases of poisoning, with twenty deaths. Since then quite a number of deaths have been recorded in the medical journals. The dose at which fatal poisoning has occurred varied within marked limits. In five fatal cases reported by Manheim, the quantity of the alkaloid

taken was over 15 grains. In two cases reported by Mattison, death occurred after the hypodermic injection of two-thirds of a grain. Symptoms of poisoning have set in when the drug was administered by the stomach, when thrown into the urethra, nose, ear, rectum, or when injected under skin or into the gum; or when simply rubbed over the surface of the face. Absorption is very rapid, and in some of the cases reported the operator barely had time to withdraw the needle of his syringe before symptoms of intoxication set in. The symptoms described in each case differ greatly, and there are all stages, from slight incoherency in speech, with dizziness and dilated pupils, to excited hallucinatory delirium, thready, uncountable pulse, convulsive breathing, or sudden collapse, or marked tetanic spasms. Cocain poisoning exhibits the symptoms of strychnin poisoning in some cases, in others that of alcohol, and in some a mixture of both."

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A NEW OPERATION FOR CONGENITAL PTOSIS, WITH  
REPORT OF TWO CASES.

T. C. Evans, M. D., Louisville, Ky., (*New York Medical Journal*, December 21, 1895). Dr. Evans reports four operations, on two cases of congenital ptosis, performed by a modification of Mules' method, and gives copies of photographs, which indicate excellent results. "With the patient anesthetized, I made an incision three-eighths of an inch long in the free margin of the lid and about one-sixteenth of an inch in depth, the site of the incision being midway between the outer and inner canthus. I then made a second incision three-fourths of an inch in length above the brow, extending through the integument and occipito-frontalis muscle (the most prominent part of the occipito-frontalis having been determined and marked prior to the anesthesia). Then, taking a flat needle with a long, flexible shank with the eye very near the point, carrying about six inches of No. 30 silver wire, I passed it into the lid at the inner extremity of the marginal incision, passing upward between the orbicularis muscle and the tarsus, under the brow, coming out at the inner extremity of the incision above the brow. The needle was withdrawn, leaving the wire in position, the other end of the wire was passed through the eye of the needle and carried into the outer extremity of the marginal incision and

brought out at the outer extremity of the superior incision, and the needle withdrawn as in the first instance. The loop of wire was drawn into the marginal incision and the wound closed with four or five firm sutures. The ends of the wire were then passed through a perforated shot and traction made until the desired elevation of the lid was secured. The shot was then pressed with pliers and the excess of wire clipped off, leaving a quarter of an inch on each side of the shot. The incision was closed with silk sutures. Afterward the superior incisions were dressed with iodoform gauze; the marginal incisions were left without dressing. Both eyes of each patient were operated upon under one anesthesia. The sutures were removed from both superior and marginal incisions forty-eight hours after operation. The results in the four operations have all been successful far beyond my expectations."

Contrasting his operation with the original one of Mules (*Lancet*, May 11, 1895; report in these ANNALS, July, 1895), he says:

"The points of superiority of the operation as devised by me are that the incisions make it possible to bury the wire from the start without waiting for it to 'sink below the skin' of its own accord. With the incisions, the recovery from the operation is practically complete in forty-eight hours. The introduction of the needle at the lid margin instead of above the brow removes the possible danger of passing through the lid and puncturing the sclera, and secures a better position for the suture. With the perforated shot the degree of elevation of the lid is quickly, easily and accurately controlled, without endangering the integrity of the wire by twisting. Then, if at any time after the operation it is desirable to modify its effects, it is only necessary to cut down upon the shot, which can readily be felt beneath the skin, and diminish or increase the effect by altering the length of the wire loop.

"In all four operations I used a No. 1 shot, and had the perforations made barely large enough to admit the two wires. As to the permanency of their result, the only thing that could unfavorably influence it would be the migration of the suture. The size and shape of this, together with the imbedding of the shot, makes this so remote a probability as to practically eliminate it from consideration."

## TREATMENT OF PURULENT OPHTHALMIA BY EXTENSIVE IRRIGATION WITH PERMANGANATE OF POTASH.

Dr. Kalt, Paris, (Report of the Ophthalmological Society of Heidelberg, August, 1895, *Annales d'Oculistique*, English edition, September, 1895. "Treatment with extensive irrigations, such as were introduced in the isolated ward of the Quinze-Vingts in 1894, has been used since then in the treatment of all cases of ophthalmia and purulent catarrh by my colleagues, Drs. Trousseau and Chevallereau. In examining my personal statistics, I find that 105 cases of ophthalmia of the new-born, thirteen cases of blenorrhoeic ophthalmia of adults and forty-eight cases of purulent conjunctivitis in children and adults, in all 156 cases, have been treated in this way. The purulence has always been modified with great rapidity; in fact, about the fifth or sixth day the purulent effusion was very slight. Ophthalmia in children is generally cured in twelve to fifteen days.

"The irrigations should be made three time a day for the first two days, and then twice a day, passing through each eye one and one-half to two liters of warm solution (25° C.) of a 1:3,000 solution of permanganate (a teaspoonful of the saturated solution to one liter of water). I have only rarely seen superficial ulcerations in the course of treatment. If there are already deep ulcerations, irrigations should be carried on without fear. The funnel which I employ is made of glass, in three sizes. Pressure should not exceed 40 cm.

"If there are gray false membranes (streptococci) it is well to add to the 1:3,000 solution of permanganate 1:10,000 of of sublimat, that is, 10 c. c. per liter of a one per cent solution of sublimat. The fluid should be slightly warmed, that is, its temperature should be about 25° C. Nothing prevents the concurrent use of cauterizations with 1:50 of nitrat of silver, but I think they are useless."

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SLIGHT EFFECTS OF TENOTOMIES OF THE OCULAR MUSCLES, AND WHAT ARE THE INDICATIONS AND ADVANTAGES OF TENDON CONTRACTIONS?

George T. Stevens, M. D., New York (*Journal of Am. Med. Ass'n.*, November 19, 1895). The writer discusses the following questions:

1. Why are slight effects produced as the result of free tenotomies of the ocular muscles?

2. What are the indications and advantages for muscle shortening?

He sums up an answer to these questions in the following words: "Free tenotomies have slight apparent effect when the muscle operated on is not the muscle at fault, and tendon contractions are advantageous only when they are directed against a condition of muscles positively shown to be loose, not by the failure of the eye to rotate in a single direction, but by a marked excess in the sum of rotations in opposite directions."

To draw a useful lesson from these few suggestions I would say that a case of strabismus convergens or divergens is to be studied from the standpoint of the tensions of all the eye muscles, and that a very large proportion of these, and especially those of high degree, are the manifestations principally of vertical tensions.

If the rotation upward of the eyes, as shown by the tropometer, is materially less than  $40^\circ$  or  $45^\circ$ , while the downward rotation materially exceeds  $50^\circ$  or  $55^\circ$ ; no correction for the lateral deviation should be made until the rotation upward equals  $40^\circ$  and hyperphoria is absent. Or, if the upward rotation is excessive in comparison to the downward, an analogous correction is first to be made before an internal or an external rectus is cut.

If the rotations in all directions are evidently too great, indicating an absence of proper muscular tension, tendon shortening may be resorted to which will be very rarely. If the sum of the rotations is not excessive, tenotomies only are called for.

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PRACTICAL POINTS GAINED IN THE TREATMENT OF ONE THOUSAND CASES OF INSUFFICIENCIES OF THE OCULAR MUSCLES.

J. Walter Parks, M. D., Harrisburg, Pa., (*Journal of Am. Med. Ass'n.*, November 9, 1895). The writer's conclusions agree, in the main, with the view held by practically all conservative ophthalmologists; they are the following:

"1. That following up one's cases for one to two years is necessary, and should be done in all muscular insufficiencies to tabulate results for publication.

"2. Those cases involving the recti muscles occurring in hyperopia and compound hyperopic astigmatism of from  $5^{\circ}$  to  $15^{\circ}$  combined with errors of refraction will generally all do well with their refractive errors corrected; muscular exercises, outdoor life, tonic treatment and the temporary use of prisms.

"3. Those occurring in myopia and compound myopia astigmatism require the use of prisms more constantly and are not benefitted quite as much by muscle exercising as those occurring in hyperopia, etc. Tenotomies with advancements are generally more effective than in hyperopic cases.

"4. Those occurring in constitutional, paralytic and reflex cases require plenty of rest, outdoor exercising, the temporary use of prisms, electricity and general tonic treatment.

"5. Tenotomies are not necessary in most cases and should not be done until all other remedies fail.

"6. That there are some cases of esophoria of slight degree of deviation that require nothing but rest and outdoor exercise to effect a cure."

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#### DIPLOPIA IN THE PERIPHERY OF THE FIELD OF FIXATION AND ITS BEARING ON THE DIAGNOSIS OF MUSCULAR PARALYSIS.

Dr. A. Duane, New York (*Archiv. of Ophthalm.*, October, 1895). Dr. Duane draws the following conclusions from a large number of examinations of the field of fixation and of diplopia occurring in all parts of the field:

"1. Diplopia occurring at the limits of the field of fixation (beyond forty-five degrees from the primary position) is physiological. It is not, however, by any means, always present even there, and in any case is slight in amount, and in the same case often variable and inconstant. It is solely diplopia of this sort to which Dr. Alling (*Diplopia Occurring at the Periphery of the Field of Fixation*, by Dr. A. N. Alling, New Haven, Conn., *Archiv. of Ophthalm.*, July, 1895), has reference in his article and to which his arguments apply. It may be due to a natural failure of one eye to keep up with the other in its excursions or to the effects of projection, being in the latter case brought about by the rotation of the retinal horizon, real or apparent, that occurs in oblique positions of the gaze. But whether projection can produce any diplopia at all of the kind that I found

in my cases is doubtful, and in any case the effect of projection in producing vertical diplopia is very slight and makes itself apparent only at the limits of the fields of fixation.

"2. In a large number, probably the majority, of persons with natural eyes it can be proved that binocular single vision is still present even when the eyes are carried further than forty-five degrees from the primary position.

"3. Well-marked diplopia occurring as a constant phenomenon within forty degrees of the primary position indicates a weakness, or at least a want of balance of the eye-muscles. If this diplopia is still quite peripherally located, *i. e.*, occurs not less than thirty degrees from the primary position it indicates only a slight, and, very likely, temporary muscular disability such as may occur in neurasthenia, etc. As weakness from this cause is very apt to be symmetrical the diplopia is often present to about equal extent in all the oblique positions of the gaze, both to the right and left and above and below.

"4. A diplopia which begins to be apparent near the primary position and increases rapidly as the eyes are carried in any one direction indicates a serious impairment of the muscular energy, *i. e.*, a true paresis. The diagnosis will be confirmed if upon repeated examinations it is found to be constantly present, and particularly, if it shows a markedly unilateral character. Diplopia of this sort Dr. Alling does not consider in his article, and to it, therefore, his arguments do not apply. As eight out of ten of the cases I originally described, (January and April, 1894, *Archiv. of Ophthal.*) and well as some six cases which I have examined since, belong to this category; I must adhere to my original diagnosis and to the opinions based upon it."

TINNITUS AURIUM AND SOME RESULTS  
OBTAINED BY ITS TREATMENT WITH  
CONIIN HYDROBROMAT.

BY VINCENT GOMEZ, M. D.,  
OF NEW YORK CITY.

[Continued from October Number, 1895.]

*Case I.* S. W., a married woman, 25 years of age, first came under the writer's care March 16, 1895. She had been troubled very much for about two years with deafness and a constant tinnitus and at times severe vertigo. Examination reveals the following: Hearing distance, left ear: watch = 2 inches, whisper = 20 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	a. c.	a. c.	a. c.	a. c.	a. c.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	14	12	17	11	10
Schwabach .....	8	6	9	8	3

Hearing distance, right ear: watch = zero, whisper = 8 inches.

TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	b. c.	b. c.	b. c.	
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	0	2	5	4	0
Schwabach .....	6	8	6	5	

Weber's test + in right ear.

Otoscopic examination; left ear—The membrana tympani is greatly retracted, moderate opacity, which is well marked posteriorly; light reflex is dim, small and marginal. Right ear—The membrana tympani is greatly retracted; diffused opacity; light reflex dim and circumscribes the umbo.

Diagnosis: Otitis interna et media. The patient was given coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

April 20. She was again seen and says at times the tinnitus does not seem as loud, and does not feel any dizziness.

May 7. Tinnitus somewhat diminished; no vertigo.

May 25. Has been taking coniin gr.  $\frac{1}{60}$ , three times daily, faithfully, but the tinnitus is about the same.

June 8. Tinnitus about the same. Discontinued use of medicine.

*Case II.* C. J., 43 years of age, was seen April 19, 1895. Has noticed that for five or six weeks she is gradually becoming deaf, this being accompanied with a constant tinnitus in both ears. Hearing distance, left ear: watch = 2 inches, whisper = 10 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	b. c.	a. c.	a. c.	a. c.
	6	5	12	9	5
Schwabach .....	6	9	6	5	3

Hearing distance, right ear: watch = contact, whisper = 6 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	b. c.	b. c.	a. c.	a. c.
	6	6	8	5	4
Schwabach .....	8	9	12	3	2

Weber's test = in both.

Otoscopic examination; left ear—Membrana tympani is greatly retracted and opaque, light reflex dim and small. Right ear—Membrana tympani very greatly retracted and very opaque. The light reflex is a mere central dot.

Treatment: Coniin gr.  $\frac{1}{60}$ , three times daily.

April 27. Patient thinks tinnitus is not as loud, and where before it was constant, now it leaves her for a short while and returns, but not as loud.

May 4. Tinnitus stays away for a longer time than formerly; feels a great deal more comfortable; noise is not as loud.

May 15. Tinnitus much better.

May 25. Tinnitus only present at night.

June 1. About the same.

June 8. The tinnitus has assumed a different character, but is about the same.

June 10. To-day has had no tinnitus. Discontinued coniin.

*Case III.* M. T., 31 years of age, seen February 16, 1895. Complains of a severe and constant tinnitus in both ears with some impairment of hearing for six weeks.

Hearing distance, left ear: watch = 50 inches, whisper = 25 + feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	12	18	19	18	8
Schwabach .....	14	16	8	16	0
Galton's whistle = 2 <sup>6</sup> / <sub>10</sub> .					

Hearing distance, right ear: watch = contact, whisper = 20 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	a. c.	a. c.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	5	8	15	11	7
Schwabach .....	19	14	16	9	0
Galton's whistle = 2 <sup>9</sup> / <sub>10</sub> . Weber's test + in right ear.					

Diagnosis: Otitis interna et media.

Otoscopic examination; left ear—Membrana tympani is moderately retracted, the light reflex is shortened and dulled. Right ear—About the same as the left ear only the changes are not as marked.

Treatment. Coniin gr.  $\frac{1}{60}$ , three times daily.

February 23. Tinnitus in the left ear is considerably diminished, feels a great deal better.

March 16. Head feels clearer; tinnitus has diminished steadily; thinks she can hear better.

Hearing distance, right ear: watch = contact, whisper = 25 feet. Hearing distance, left ear: watch = 60 inches, whisper = 35 feet.

March 30. Has not been taking any medicine for five days, and tinnitus is much worse.

April 20. Tinnitus only present at night.

May 6. Has not been taking any coniin for ten days and thinks tinnitus is decidedly worse.

May 11. She says tinnitus is lessened in amount, and is not as loud.

May 25. Has not taken any coniin for one week and tinnitus is about the same.

June 8. Very slight amount of tinnitus only at night.

*Case IV.* Patrick Mc., 45 years of age. Has noticed for past eight months a very distressing tinnitus in both ears, worse in the right ear, and it seems louder at night. Has had impaired hearing for about twenty years.

Hearing distance, left ear: watch = light contact, whisper = 4 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	a. c.	a. c.	a. c.	a. c.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	7	16	20	14	6
Schwabach .....	7	8	0	5½	0

Galton's whistle = 1 —  $\frac{8}{10}$ .

Hearing distance, right ear: watch = zero, whisper = 3 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	a. c.	a. c.	a. c.	a. c.	a. c.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	25	12	22	15	2
Schwabach .....	8	6	4	2	0

Galton's whistle = 1 —  $\frac{8}{10}$ .

Diagnosis: Otitis interna et media.

Treatment: Coniin gr.  $\frac{1}{60}$ , three times daily.

May 3. Tinnitus somewhat diminished; head feels clear.

May 10. About the same.

May 17. Noise is about the same, no improvement.

*Case V.* John C., 56 years of age, was first seen May 1, 1895. Deafness with buzzing tinnitus in both ears for six months which is gradually getting worse.

Hearing distance, left ear: watch = light pressure, whisper = 12 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C <sup>2</sup>
Rinné.....	a. c.
	<hr/>
	14
Schwabach .....	6

Hearing distance, right ear: watch =  $\frac{1}{2}$  inch, whisper = 12 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C <sup>2</sup>
Rinné.....	a. c.
	<hr/>
	16
Schwabach .....	8

Weber's test + in right ear.

Otoscopic examination; left ear—Membrana tympani is very dull and retracted; no light reflex. Right ear—Much the same as left.

Diagnosis: Otitis media et interna.

Treatment: Coniin gr.  $\frac{1}{60}$ , three times daily.

May 15. No improvement.

May 25. Tinnitus about the same; increased dose to gr.  $\frac{1}{40}$ .

June 1. No improvement, the character of the tinnitus about the same; discontinued the use of coniin.

*Case VI.* James Mc., 32 years of age. For the past year buzzing tinnitus with some deafness in left ear.

Hearing distance, left ear: watch = zero, whisper = 5 feet

## TUNING-FORK REACTION—LEFT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	0	0	0	0	5	6
Schwabach.....	15	10	7	7	9	4

Galton's whistle = 2 —  $\frac{3}{10}$ .

Hearing distance, right ear: watch = 4 inches, whisper = 20 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C — 1	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	5	21	11	15	17	11
Schwabach ..	12	11	6	10	8	0

Galton's whistle =  $\frac{5}{10}$ . Weber's test + in left ear.

Otoscopic examination; left ear—Membrana tympani is retracted and dulled; no light reflex. Right ear—Membrana tympani retracted and dulled; light reflex, small and dim.

Diagnosis: Otitis media et interna.

Treatment: Coniin gr.  $\frac{1}{60}$ , three times daily.

May 15. Tinnitus about the same.

May 22. No improvement; increased dose to gr.  $\frac{1}{40}$ .

May 27. Tinnitus is just as loud and has not diminished. Increased dose to gr.  $\frac{1}{30}$ , three times daily.

May 31. No improvement in the tinnitus, but head feels clear. This morning some gastric disturbance. Discontinued the use of coniin.

*Case VII.* Louis H., 43 years of age, was seen first on March 23, 1895, giving this history: Deafness in right ear ever since he can remember, which of late is getting worse, never had any tinnitus in this ear. In the right ear he has been deaf with constant tinnitus for nine years. He attributes his trouble in the right ear to the following: His little son drove a pin in this while he was sleeping. He cerebrates slowly.

Hearing distance, left ear: watch = contact, whisper = 20 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C — 1	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	8	9	7	8	6
Schwabach .....	14	15	13	16	11	0

Galton's whistle =  $1 - \frac{6}{10}$ .

Hearing distance, right ear: Watch = 2 inches, whisper = 18 feet.

## TUNING FORK REACTION—RIGHT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	0	0	12	12	7
Schwabach .....	12	16	12	8	14½	0

Galton's whistle = 1 —  $\frac{4}{10}$ . Weber's test + in right ear.

Otoscope examination: left ear—Moderate sized inferior perforation, healed fracture of malleus, cicatrix in membrana flaccida. (Hepburn's case.) Right ear—Dry posterior perforation, and also above over hammer handle, apparent cicatrical condition. Treatment: Coniin gr.  $\frac{1}{60}$ , three times daily.

April 20. Has been taking coniin for about three weeks, and does not think tinnitus has changed.

April 27. Does not notice any change in the tinnitus. Increased coniin to gr.  $\frac{1}{64}$ , three times daily.

May 11. Has been taking coniin faithfully, but does not notice any change in the tinnitus.

May 18. No improvement; some nausea and vomiting; no vertigo; discontinued the use of coniin.

*Case VIII.* Martha M., 16 years of age, was seen for the first time on February 15, 1895, complains of deafness with constant tinnitus in both ears for four years, which seems to become worse.

Hearing distance, left ear: Watch = 12 inches, whisper = 20 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	b. c.	a. c.	a. c.	a. c.
	10	11	18	9	8
Schwabach.....	13	14	14	7	4

Hearing distance, right ear: Watch = 12 inches, whisper = 20 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	a. c.
	5	7	11	6	3
Schwabach .....	10	11	14	8	1

Weber's test + in right ear.

Otoscopic examination: Left ear—Membrana tympani greatly retracted; marked posterior opacity; no light reflex. Right ear—Membrana tympani greatly retracted; well-marked posterior opacity; light reflex, dim and small.

Diagnosis: Otitis media, chronica catarrhalis.

Treatment: Coniin gr.  $\frac{1}{60}$  three times daily.

April 3. Tinnitus somewhat diminished and stays away for longer periods.

April 27. Tinnitus very much diminished.

May 14. Has had no tinnitus for ten days, feels good and says she hears better.

June 8. She has had no tinnitus for over one month.

Case IX. Hannah O., 36 years of age, seen first on May 23, 1895. For four weeks had severe and constant tinnitus in the left ear, which seemed to have a progressive course.

Hearing distance, left ear: Watch = 40 inches, whisper = 30 + feet,

TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	15	11	20	12	8
Schwabach.....	11	9	8	6	2

Hearing distance, right ear: Watch = 60 inches, whisper = 30 + feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	10	15	18	17	8
Schwabach.....	7	11	7	6	3

Weber's test + in right ear.

Otoscopic examination: Left ear—The membrana tympani presents marked retraction and opacity; light reflex dim, central and broken. Right ear—About normal.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

May 31. Tinnitus very much diminished.

June 8. About the same, increased dose of coniin to gr.  $\frac{1}{40}$ , three times daily.

June 10. Tinnitus has not been present since yesterday morning. Patient did not return.

*Case X.* Mrs. C. W., 25 years of age, consulted me on March 6, 1895, for a very distressing tinnitus in both ears, with dullness of hearing which has troubled her for about five years. She attributes her present trouble to an attack of grip.

Hearing distance, left ear: Watch = 16 inches, whisper = 27 feet.

TUNING-FORK REACTION—LEFT EAR.

	C — <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	a. c.	a. c.
	5	6	9	14	14	6
Schwabach .....	10	11	10	15	10	2

Galton's whistle = 1 —  $\frac{5}{10}$ .

Hearing distance, right ear: watch = 12 inches, whisper = 25 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C — <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	a. c.	a. c.
	6	6	5	6	9	4
Schwabach .....	11	12	11	12	8	0

Galton's whistle = 1 —  $\frac{3}{10}$ . Weber's test + in left ear.

Otoscopic examination: Left ear—Moderate retraction of membrana tympani; slight dullness; light reflex broken. Right ear—About the same as left ear.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

March 16. Tinnitus has diminished for six days steadily, but contracted a severe cold in the head, and the tinnitus became worse, but not as loud as formerly.

March 23. Tinnitus in the left ear has diminished very much; has had no tinnitus in the right ear for three days.

March 30. About the same.

May 2. Tinnitus is ever so much better.

May 8. Tinnitus has entirely disappeared from right ear; very much diminished in left ear and not as loud. Discontinued the coniin.

May 12. No tinnitus in the right ear; about the same in the left ear.

June 1. Has not been taking any coniin for nearly one month. Has had, at times, some tinnitus in the right ear; about the same in left ear.

*Case XI.* Timothy C., 55 years of age, seen first on February 20, 1895, giving this history: Constant tinnitus, with deafness in both ears for about seven years, which is getting much worse since last week.

Hearing distance, left ear: watch = light pressure, whisper = 4 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	21	14	26	16	6
Schwabach.....	9	6	7	0	0

Galton's whistle = 2 —  $\frac{5}{10}$ .

Hearing distance, right ear: watch = 3 inches, whisper = 6 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	20	10	25	19	9
Schwabach.....	10	8	10	4	0

Galton's whistle = 2 —  $\frac{9}{10}$ . Weber's test = in both ears.

Otoscopic examination: Left ear—Membrana tympani somewhat retracted; light reflex irregular. Right ear—The same as left ear.

Diagnosis: Otitis interna.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

April 20. Has been taking coniin regularly for one month, but does not notice any improvement. Increased coniin to gr.  $\frac{1}{40}$ , three times daily.

April 27. No improvement. Increased to gr.  $\frac{1}{30}$ , three times daily.

May 3. No improvement. Increased dose to gr.  $\frac{1}{30}$ , four times daily.

May 5. Some gastric disturbance; no improvement. Discontinued use of coniin.

*Case XII.* Annie C., 60 years of age, was first seen on February 16, 1895. She complained of constant tinnitus in both ears for over one year, but of late is much worse.

Hearing distance, left ear: Watch = 8 inches, whisper = 14 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	1	11	11	14	11	8
Schwabach.....	9	9	7	0	2	0
Galton's whistle =	3 — <sup>1</sup> / <sub>10</sub> .					

Hearing distance, right ear: Watch = 8 inches, whisper = 12 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	a. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	6	8	10	11	6	2
Schwabach.....	4	8	0	0	0	0

Galton's whistle = 3 — <sup>2</sup>/<sub>10</sub>. Weber's test = negative.

Otoscopic examination; left ear—Membrana tympani greatly retracted, marked opacity, especially anterior; no light reflex; short process of hammer very prominent. Right ear—Marked retraction of drum membrane; diffused opacity; no light reflex.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr. <sup>1</sup>/<sub>60</sub>, three times daily.

February 12. Tinnitus somewhat diminished.

February 19. Tinnitus is much better, but last night after taking gr. <sup>1</sup>/<sub>60</sub> it gave rise to some vertigo which lasted about one hour.

February 26. Tinnitus is only present when she is in the recumbent posture, and in the morning.

*Case XIII.* Mary L., 47 years of age; seen for the first time on March 20, 1895. She complains of constant tinnitus in both ears for three months.

Hearing distance, left ear: watch = zero, whisper = 5 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>3</sup>
Rinné.....	a. c.	a. c.
	14	12
Schwabach .....	6	6

Galton's whistle =  $2 - \frac{1}{10}$ .

Hearing distance, right ear: watch = light pressure, whisper = 14 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>3</sup>
Rinné .....	a. c.	a. c.
	18	12
Schwabach .....	8	6

Galton's whistle =  $2 - \frac{1}{10}$ . Weber's test = in both ears.

Otoscopic examination; left ear—Hammer vessels injected; light reflex; a hazy dot. Right ear—About the same as left.

Diagnosis: Otitis interna with slight otitis media.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

May 11. Tinnitus very much diminished, and the feeling of fullness in the ears has disappeared.

May 18. Has had the tinnitus present only at times.

May 25. Has not been taking any coniin for nearly one week and tinnitus is much worse.

June 1. Tinnitus somewhat better.

June 8. Has had very slight tinnitus during morning only.

*Case XIV.* Laura S., 39 years of age; seen March 30, 1895. For about twelve years some dullness of hearing with constant tinnitus in both ears.

Hearing distance, left ear—watch = zero, whisper = 4 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C — <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	a. c.	a. c.	a. c.
	0	3	6	14	12	8
Schwabach .....	7	14	9	12	8	0

Galton's whistle =  $1 - \frac{7}{10}$ .

Hearing distance, right ear: watch = zero, whisper = 4 inches.

## TUNING-FORK REACTION—RIGHT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	0	0	5	3	0
Schwabach .....	5	9	9	15	10	0

Galton's whistle = 2 —  $\frac{6}{10}$ . Weber's test = in both ears.

Otoscopic examination; left ear—Membrana tympani slightly dulled and succulent; light reflex only a dot. Right ear—Membrana tympani moderately retracted; slight dullness; light reflex a dot.

Diagnosis: Otitis interna et media.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

April 6. Has contracted a very bad cold and tinnitus is about the same.

April 13. Tinnitus very much diminished.

April 30. Tinnitus not as loud nor as constant.

May 6. Tinnitus is about the same as formerly, and she thinks it disturbs her stomach.

Case XV. R. M., 18 years of age; first came to me on March 6, 1895, complaining of deafness and constant tinnitus in both ears of four months duration which seems to be getting worse.

Hearing distance, left ear: watch = 6 inches, whisper 18 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	b. c.	b. c.	b. c.	b. c.	a. c.
	0	0	4	10	12	9
Schwabach .....	8	9	10	17	13	8

Galton's whistle = 1 —  $\frac{7}{10}$ .

Hearing distance, right ear: watch = 1 inch, whisper = 12 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	b. c.	a. c.	a. c.
	0	2	5	7	12	8
Schwabach .....	7	8	10	15	10	5

Galton's whistle =  $1 - \frac{8}{10}$ . Weber's test + in the left ear.

Otoscopic examination; left ear—Membrana tympani slightly succulent; light reflex broken, somewhat thickened; incus shows. Right ear—About the same as the left ear.

Diagnosis: Otitis media catarrhalis chronica with slight nerve involvement.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

March 10. Tinnitus about the same.

March 15. Has been taking coniin gr.  $\frac{1}{60}$  regularly, but does not notice any improvement. Increased dose to gr.  $\frac{1}{40}$ , three times daily.

March 22. About the same as formerly, no improvement; gr.  $\frac{1}{30}$ , three times daily.

March 29. Notices some improvement in the tinnitus; no disturbance; gr.  $\frac{1}{30}$ , four times daily.

April 2. This morning some gastric disturbance. Tinnitus about the same, but not as loud as before taking coniin.

*Case XVI.* Harry S., 35 years of age; seen first on March 2, 1895. For two months hardness of hearing with, at times, severe tinnitus in both ears.

Hearing distance, left ear: watch = contact, whisper = 25 feet.

#### TUNING-FORK REACTION—LEFT EAR.

	C— <sup>1</sup>	C	D <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	6	20	18	25	17	6
Schwabach .....	8	7	5	10	10	0

Galton's whistle =  $2 - \frac{7}{10}$

Hearing distance, right ear: watch = 6 inches, whisper = 27 feet.

#### TUNING-FORK REACTION—RIGHT EAR.

	C— <sup>1</sup>	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	a. c.	a. c.	a. c.	a. c.	a. c.
	10	12	14	25	16	8
Schwabach .....	11	6	5	10	10	0

Galton's whistle =  $2 - \frac{5}{10}$ . Weber's test + in right ear.

Otoscopic examination; left ear—Membrana tympani slightly dulled and succulent; light reflex shortened. Right ear—Drum membrane much the same.

Diagnosis: Otitis media et interna.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

March 9. Tinnitus completely disappears at times but returns; feels good.

March 15. Tinnitus about the same; after taking three doses of coniin felt oppression over the precordial region with some vertigo.

March 30. Has not been taking any coniin for four days. Tinnitus about the same but it is less than it was before treatment.

April 2. Coniin gr.  $\frac{1}{60}$ , twice daily.

April 5. About the same; coniin gr.  $\frac{1}{60}$ , three times daily.

April 12. No disturbance; tinnitus somewhat better; increased dose to gr.  $\frac{1}{30}$ , three times daily.

April 19. Tinnitus very much improved. (Patient did not return.)

*Case XVII.* James H., 50 years of age; was seen for the first time on March 18, 1895. Has had deafness and tinnitus in the left ear for about twenty years; in the right for three years.

Hearing distance, left ear: watch = light pressure, whisper = 2 feet.

#### TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	11	8	16	11	5
Schwabach .....	7	5	0	0	0

Galton's whistle = 4 —  $\frac{2}{10}$ .

Hearing distance, right ear: watch = light pressure, whisper = 12 feet.

#### TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	10	11	12	11	5
Schwabach .....	0	0	4	0	0

Galton's whistle =  $3 - \frac{3}{10}$ . Weber's test + in right ear.

Otoscopic examination; left ear—Drum membrane slightly retracted; light reflex broken and dim. Right ear—About the same as the left.

Diagnosis: Otitis interna.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

March 9. Tinnitus has changed in character, and does not seem as loud.

March 23. Has not been taking any medicine for one week but tinnitus does not seem to be any worse.

April 11. Has been taking coniin gr.  $\frac{1}{40}$ , three times daily, for one month, and while taking it does not experience any tinnitus; but for last four days has not taken any coniin and the tinnitus has returned slightly.

April 18. About the same.

April 25. No disturbance; tinnitus much better. (Patient did not return.)

*Case XVIII.* Gustave L., 42 years of age; was first seen on December 26, 1894. Deafness in, and discharge from right ear since childhood with some tinnitus. He recovered from this, but returned on May 20, 1895, complaining from severe constant tinnitus in both ears.

Hearing distance, left ear: watch = contact, whisper = 15 feet.

#### TUNING-FORK REACTION—LEFT EAR.

	C <sup>1</sup>
Rinné.....	b. c.
	12
Schwabach .....	18

#### TUNING-FORK REACTION—RIGHT EAR.

	C <sup>1</sup>
Rinné.....	b. c.
	15
Schwabach .....	19

Weber's test + in the left ear.

Hearing distance, right ear: watch = 2 inches, whisper = 20 feet.

Otoscopic examination; left ear—Posterior perforation showing incudo-stapedial joint enclosed in tissue. Right ear—Inferior perforation.

Diagnosis: Otitis media purulenta residiosa.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

May 25. Has been taking coniin regularly, and thinks tinnitus is somewhat diminished.

June 6. Tinnitus is about the same.

June 8. About the same; gr.  $\frac{1}{30}$ , three times daily.

June 15. Some gastric disturbance; discontinued the use of coniin.

*Case XIX.* George A. B., 66 years of age, first came under observation February 14, 1895. He has been troubled for about one year with deafness and constant tinnitus in both ears, which is getting worse.

Hearing distance, left ear: Watch = contact, whisper = 10 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	25	18	28	15	9
Schwabach .....	9	7	9	6	0

Hearing distance, right ear: Watch = pressure, whisper = 9 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	15	12	20	12	6
Schwabach.....	14	10	11	10	0

Weber's test = in both ears.

Otoscopic examination: Left ear—Membrana tympani is greatly retracted and very opaque; no light reflex. Right ear—Membrana tympani greatly retracted and very opaque; light reflex small, dim and central.

Diagnosis: Otitis interna et media.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

February 21. Tinnitus somewhat improved; gr.  $\frac{1}{40}$ , three times daily.

February 27. Head feels clear; marked improvement in the tinnitus.

March 5. About the same; gr.  $\frac{1}{30}$ , three times daily.

March 10. Tinnitus somewhat improved; gr.  $\frac{1}{30}$ , four times daily.

March 15. Has had no tinnitus in the left ear for two days; about the same in the right ear.

March 20. No disturbance; no tinnitus, except at night slightly.

*Case XX.* Lena E., 24 years of age, seen for the first time April 25, giving the following history: For about one year dullness of hearing, with a distressing, constant tinnitus in both ears, which seemed to remain about the same.

Hearing distance, left ear: Watch = 3 inches, whisper = 12 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	b. c.	b. c.	a. c.	a. c.
	0	9	12	12	9
Schwabach .....	14	16	15	10	3

Galton's whistle = 1 —  $\frac{8}{10}$ .

Hearing distance, right ear: Watch = 6 inches, whisper = 14 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	b. c.	a. c.	a. c.	a. c.	a. c.
	5	11	16	12	11
Schwabach .....	10	9	14	11	6

Galton's whistle = 1 —  $\frac{5}{10}$ . Weber's test + in the left ear.

Otoscopic examination: Left ear—Membrana tympani, great retraction and opacity; no light reflex. Right ear—Membrana tympani somewhat retracted and opaque; no light reflex; redness along malleus handle.

Diagnosis: Otitis media catarrhalis chronica.

Treatment: Coniin hydrobromat gr.  $\frac{1}{80}$ , three times daily.

April 28. About the same.

May 2. Tinnitus about the same; gr.  $\frac{1}{40}$ , three times daily.

May 10. No improvement; gr.  $\frac{1}{40}$ , four times daily.

May 13. Very slight improvement.

May 25. Head feels clear; tinnitus about the same; gr.  $\frac{1}{80}$ , three times daily.

June 1. About the same.

*Case XXI.* John J. C., 26 years of age, seen first June 11, 1895, giving the following history: Eight months ago fell from a ladder while at work and sustained a contusion of the brain, he at once became unconscious and remained so for three days. He does not remember having had any bleeding from the ear, nor did he have any discharge subsequently. Ever since he left the hospital he has a staggering gait with some vertigo and a distressing tinnitus in the left ear. The right ear does not seem to bother him.

Hearing distance, left ear: Watch = pressure, whisper = 17 feet.

TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	b. c.	b. c.	b. c.	a. c.	a. c.
	0	0	6	9	6
Schwabach .....	6	5	10	6	2

Hearing distance, right ear: Watch = 16 inches, whisper = 25 feet.

TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	10	18	19	18	8
Schwabach .....	6	5	7	6	0

Weber's test + in the right ear.

Ophthalmic examination: Left ear—Membrane tympani normal, except light reflex, small and dim. Right ear—Same as the left.

Diagnosis: Fracture of temporal bone, otitis media et interna.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

June 19. Has been taking coniin regularly, but does not notice any change in the tinnitus.

June 22. Tinnitus seems to be worse; gr.  $\frac{1}{60}$ , six times daily.

June 30. Tinnitus not quite so bad; head feels a great deal better. (Patient did not return.)

*Case XXII.* A. M., 29 years of age, seen for the first time June 20, 1895. For about five years a constant, high-pitched tinnitus in both ears, being worse at night, and at times does not permit him to sleep.

Hearing distance, left ear: Watch = 15 inches, whisper = 20 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	18	15	25	15	10
Schwabach.....	8	6	7	5	4

Hearing distance, right ear: Watch = 15 inches, whisper = 20 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné.....	a. c.	a. c.	a. c.	a. c.	a. c.
	16	14	18	16	10
Schwabach.....	5	7	9	8	5

Otoscopic examination: Left ear—Membrana tympani, great retraction and opacity; light reflex dim and broken. Right ear—Same as left.

Diagnosis: Otitis interna et media.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , six times daily.

June 23. Tinnitus is somewhat better and disappears at times for a short while.

June 25. Tinnitus for last two days has only been present at night; increased dose to gr.  $\frac{1}{30}$ .

June 30. Has had no tinnitus for two days.

July 3. Has not had any tinnitus all day. Patient did not return.

*Case XXIII.* Thomas T. D., 45 years of age, was first seen on June 28, 1895. For two years a constant tinnitus in the left ear, which seems to remain about the same.

Hearing distance, left ear: Watch = 1 inch, whisper = 20 feet.

## TUNING-FORK REACTION—LEFT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	a. c.	a. c.	a. c.	a. c.	a. c.
	18	17	20	17	7
Schwabach .....	6	5	4	4	0

Hearing distance, right ear: Watch = 3 inches, whisper = 20 feet.

## TUNING-FORK REACTION—RIGHT EAR.

	C	C <sup>1</sup>	C <sup>2</sup>	C <sup>3</sup>	C <sup>4</sup>
Rinné .....	a. c.	a. c.	a. c.	a. c.	a. c.
	20	15	15	15	10
Schwabach .....	5	5	8	7	3

Weber's test + in the right ear.

Treatment: Coniin hydrobromat gr.  $\frac{1}{60}$ , three times daily.

July 2. No improvement, louder if anything; increased dose to gr.  $\frac{1}{60}$ , four times daily.

July 6. No improvement, is about the same; gr.  $\frac{1}{30}$ , six times daily.

July 14. No improvement.

Six cases were very much improved, six were improved somewhat, one was entirely cured and ten were not benefited at all.

The best results were obtained in the cases where both the middle and internal ear were effected.

The largest dose given was gr.  $\frac{1}{30}$ , and anything higher than this usually gave rise to gastric disturbances, but could be somewhat averted if the precaution was taken to take the dose after meals.

137 East Twenty-Eighth Street.

## AURAL VERTIGO.\*

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THE term vertigo means a "turning" and is used to designate a disturbance of the equilibrium of the body with surrounding objects, a real or a seeming movement of external objects. The popular synonym for vertigo is giddiness. The principle varieties in their relative frequency are auditory, epileptic and cerebral. The ocular and gastric varieties I consider as exciting causes, and will, therefore, be considered as such when I speak of the etiology and treatment. I have, for some time, studied the form which in eighty per cent of all cases of vertigo is, I think, due to some auditory disease, or disturbance of the sound perceiving apparatus, viz: Auditory vertigo. Physicians generally attribute the majority of their cases of vertigo to gastric disturbances; but this you will find in the most of them upon a thorough examination of their hearing to be erroneous. The cause is in the middle ear, labyrinth, or semi-circular canals. It is, therefore, a symptom of some pathological changes taking place within the organ of hearing.

*Etiology:* Aural vertigo seems to result from almost any disease which interferes with the labyrinth or with the nerve endings therein contained. It is not generally met with in children, or as a result of any inflammatory or carious conditions of the middle ear. It is seldom met with in people under 20 years of age, occasionally between 20 and 30, and frequently

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\* Read before Dauphin Co. Med. Soc., March, 1895.

after 30. The majority of cases occur between 30 and 60 years, and are more frequently seen among men than women. The exact changes that take place in the labyrinth are not definitely known. Gouty and syphilitic causes are occasionally met with. Sometimes it comes on from exposure to cold, as well as slow and degenerative disease of the labyrinthine membrane or of the acoustic nerve. Errors of refraction and gastric disturbances, as heretofore mentioned, are only exciting causes. The most frequent causes in my practice have been chronic catarrhal changes in the middle ear. A careful examination will generally show a retracted tympanic membrane and handle of the malleus. The posterior and anterior folds are quite tense, and very often considerable ankylosis of the ossicles exist. These conditions may exist and no vertigo be present, but in the majority of all cases of aural vertigo these pathological changes are visible, and one of the positive proofs are to take a blunt or square-ended probe and make gentle pressure on the short process of the malleus and you generally produce the same vertiginous sensations that the patient complains of when an attack of vertigo comes on.

*Symptoms:* The symptoms of aural vertigo are numerous and varied in character. It generally comes on in paroxysms, sometimes every few hours, and at other times once a day or every few days, or only every few weeks. They may come on in the night when the patient is asleep as well as in the day time. When they occur at night, and the patient is relieved by getting up from the horizontal position, it is generally due to some trouble in the semi-circular canals. Some patients complain of a sensation as if falling from a great height, and are often awakened by a sharp report or snapping sound. This is generally caused by a sudden contraction of the tensor tympani or stapedius muscles. Tinnitus aurium is almost always a constant symptom and very often increases in intensity as the vertigo becomes more marked. Deafness on the affected side, either slight or severe, is present in very near all cases. When an attack comes on the patient generally reels toward the affected side, and may have the sensation of either falling forwards, backwards, or in a circular movement. These rotary sensations often produce vomiting of a severe type. I had a patient lately who, sometimes, when walking along the street and suddenly turn a corner, would have an attack which would

compel her to sit down before she could proceed any further, and have intense nausea and vomiting attacks without a sign of gastric disturbance at any other time. Diplopia is a frequent symptom in severe cases, generally coming on during an attack, and is mostly caused by the nystagmatic movements of the eyeballs which is present in most cases, generally during a paroxysm. These symptoms disappear when the attack ends.

*Diagnosis:* Aural vertigo is generally easily diagnosed, especially when it occurs in conjunction with tinnitus and deafness, be it either of a mild or a severe type. The fact that an attack occurs during some digestive disturbance does not prove it to be of gastric origin. A patient may have attacks of acute dyspepsia for some time and yet have no vertigo, and may then become slightly or entirely deaf in one ear, and after that have attacks of vertigo every time he has an attack of his dyspepsia. Acute attacks of dyspepsia bring on attacks of vertigo after the primary cause is once established and known to be of aural origin. Errors of refraction in like manner are exciting causes and are explained in the same manner as those of gastric origin; they assist in making up a diagnosis in the following explanation: By having both of these disturbances corrected the patient may still have some vertigo, or may not have until an acute attack of dyspepsia sets in or he lays off his glasses when the attacks again come on, but when we remove the aural defects he can then have attacks of dyspepsia or lay off his glasses and have no return of vertigo. Sudden movements of the head in either direction and bringing on an attack is also further proof of it being of aural origin. From cerebral disease it is distinguished by the tinnitus and loss of consciousness lasting much longer in the former while, in fact, hardly any loss of consciousness exists in the latter as well as other brain symptoms which are not present, as a rule, in cerebral disease, similar to those in aural troubles.

There are some other forms of vertigo as a result of hysteria, anemia, arterial degeneration, and such as occur in the aged from obscure causes, but all these are easily distinguished by the absence of aural symptoms. Statistics prove as I have mentioned heretofore, that about eighty per cent of all vertigo cases are caused by some pathological changes taking place in the middle or internal ear.

*Prognosis:* The prognosis in labyrinthine disease is generally serious. It does not generally cease until the acoustic nerve or its nerve endings and its functions are entirely destroyed. When the cause is found to be in the middle ear the prognosis is generally favorable if the treatment is persistently and intelligently carried out.

*Treatment:* The results of treatment of aural vertigo in my experience has generally been good when the cause was due to pathologic changes in the middle ear, and a failure in those from labyrinthine disease. When a sudden attack comes on and the change is due to pathologic conditions in the middle ear, the quickest relief is generally obtained by syringing the ear with water as hot as the patient can bear it. Relief invariably follows such cases when the vertigo is caused by pressure upon the labyrinth superinduced by a retracted and ankylosed condition of the tympanic membrane and handle of the malleus or a spasmodic contraction of the tensor tympani muscle. The regular and persistent practice of massage of the ossicles is good treatment, and will also generally relieve an attack of vertigo for the time being. The regular introduction of menthol vapor into the middle ear, has in my practice produced some good and permanent results. Pilocarpin given regularly in such doses as to produce slight diaphoresis is generally followed by good results in all cases due to catarrhal conditions of the middle ear, especially where the formative stage of any adventitious material is of recent date. Quinin is recommended by some authors, but I have not found any beneficial results from it in cases I have tried it in. In cases of a gouty or rheumatic tendency, the salicylates in conjunction with the above treatment do well; those with a syphilitic history should be treated accordingly, and improvements are generally soon noticed. The bowels should be well regulated as well as all anemic and menstrual disorders corrected. All errors of refraction or gastric disturbances should be carefully corrected. Out of a large number of cases of errors of refraction I cannot recall a single case of genuine vertigo that was solely due to eye strain, but on the contrary, when they were very carefully examined, the eye strain proved to be the exciting cause. They may even have perfect hearing and yet have some disturbance in the semi-circular canals which brings on an attack of vertigo. When none of these remedies I have suggested do any good, as

a last resort, removal of the malleus and incus have, according to the reports of Dr. Burnette, of Philadelphia, given permanent relief in such cases as have been the result of chronic catarrhal conditions of the middle ear. Lastly, I desire to call attention to the fact that all existing catarrhal conditions of the nose and naso-pharynx should not be forgotten for they are, after all, the indirect causes of most all middle ear disturbances. All these causes, when treated intelligently, are conducive to good results.

ETHMOIDITIS SUPPURATIVA, ACUTA AND  
CHRONICA—CAUSE, DIAGNOSIS AND  
TREATMENT WITH THE ANATOMY  
OF THE ETHMOID.

BY JAS. H. FARBER, M. D.,  
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IT is only in the last few years that diseases of the accessory sinuses of the nares have been recognized, and as a consequence the literature on this subject is scattered. Having been a sufferer from a suppurative affection of the ethmoid for some years myself, I have given much time to its study.

*Anatomy:* The ethmoid cells are embraced in that part of the ethmoid bone known as the lateral masses.

They extend from the cribriform plate to the middle meatus of the nose. The middle turbinated bone being a part of the "mass" and containing some of the cells. The outer boundary of the "mass" is the "orbital plate." The inner boundary is the thin bony plate bounding the superior meatus and the roof of the nose. The cribriform plate also enters into this cellular formation. So that for practical purposes the cells lie close to and between the eyes on a plane of the lower border of the eye. They communicate with the orbit through the anterior and posterior ethmoidal foramen, with the cranial cavity through the cribriform plate, with the nares through the infundibulum and with the frontal sinuses, and the anterior cells with each other.

The mucous lining of the nares is continued into these cells and up into the frontal sinuses. Their blood-supply comes from the ophthalmic artery and the sphenopalatin branches of the internal maxillary.

Their nerves are derived from the fifth nerve, Meekel's ganglion and the special sense nerve, the olfactory.

Structure is cellular, cancellated, consisting of thin, bony plates separating small cell-like spaces, allowing small inter-spaces for communication with each other.

Function, (possibly) as a resonator to the voice, partly to "filter" and distribute odor to the special nerve.

I will now confine this article to acute and chronic suppurative disease of the *anterior* ethmoidal cells.

Such inflammations are common occurrences.

They are the result of acute rhinitis which has extended through them to the frontal sinuses which, when resolution occurs, must subside either in the direction from which it came, or what is more common perhaps, it begins to subside from the frontal sinuses and continues down through the cells.

In all cases you will get a history of one or of several attacks of inflammation of the frontal sinuses or *general* "bad cold," severe frontal headache, stuffed nose, chill, fever, etc., an acute suppurative ethmoiditis is now in progress. Many cases of this character go on to complete resolution and cure; many more end in the chronic form.

The ordinary treatment prescribed for "*heavy colds*" is indicated. But in these cases it should be rigidly carried out, confinement to the house eight or ten days, purgation, hot foot baths, opium, belladonna, aconite, quinin.

Chronic ethmoiditis anterioris, if I may be permitted to call it so, is a very common occurrence. It is probably more commonly met with since "*la grippe*" made its appearance.

*Symptoms:* The chief symptoms are frequent headaches, and the presence of a thick, almost purulent, discharge, and a large tough scab coming from *one side* of the nose with a more or less catarrhal condition of the naso-pharynx.

*Diagnosis:* One symptom or condition is diagnostic; I refer to the discharge. The peculiar form of the scab, and the fact that it is loosened and expelled about every second day.

In situ it is on the middle turbinate, near its anterior extremity, extending over to the septum and completely blocking the superior meatus. The secretion is soft, not very tenacious, greenish white in color. On its under side it is hard and dry, brownish yellow, similar in appearance to a scab from a granulating skin wound. It is *deeply concave*, fitting the convex

turbinated, is hard, and holds its form when discharged. It is characteristic and diagnostic. The secretion can not be easily expelled by the patient on account of its location. The pus dripping from above gradually fills the superior meatus and runs back to the naso-pharynx, setting up the naso-pharyngeal catarrh and the disagreeable tracheitis of not uncommon occurrence, yet not so often recognized. There is practically no odor perceptible to persons in proximity to the patient. But he, himself, is conscious of a slight stench. The sense of smell is not greatly, although somewhat impaired.

*Treatment:* Remedy the existing hypertrophies, if any. Keep the nares clean. But this alone will not cure. You must open up the cells. How to do this is the next question. A careful study of the anatomy of the part will show the natural drainage to be the infundibulum. The opening of the infundibulum is in the middle meatus, just anterior to the middle turbinated convexity. The middle turbinated body itself is a part of the lateral mass of the ethmoid, and therefore a part of the cellular or cancellated bone, and of course contains cells which connect with the anterior ethmoidal cells, and it is for this reason that the secretion is found on the middle turbinated.

If the opening of the infundibulum can be found readily I pass a probe into it as far as possible, and if I find it closed I open it up with a dental drill. Usually, however, it is necessary to cut off with a small bone forceps the anterior end of the middle turbinated a sufficiently large piece to prevent accumulation of secretion, and thus at once give drainage and prevent the secondary troubles of the naso-pharynx and trachea. There will be much bleeding, which is readily controlled by tannic acid, styptic or perchlorid of iron or by plugging. When the parts have recovered from this operation, the dentist's drill is again brought to bear upon the cells, its direction starting from the level of the amputated turbinated backwards upwards and outwards towards the anterior ethmoidal foramen, the location of which is readily seen or approximated. The structure is easily penetrated and the pain *not great*. Cocain will alleviate, but a good patient will stand the operation without any anesthetic, local or general. Time and delicacy are necessary. Two or three openings are sufficient. The size of the "burr" may be best put at one-eighth of an inch. They need to penetrate

but one-quarter to one-half an inch, or until the drill is found to have penetrated a cell.

Hemorrhage is not excessive, but is more or less oozing and constant, and the patient had either best be kept under surveillance or nose packed well. Usually, however, it is safely, nay easily controlled.

It is flushed with either bichlorid, 1:4,000, or with the peroxid of hydrogen. The openings being cauterized on the edges with galvano cautery. A successful issue is not in doubt.

Fortunately for the patient the disease is not dangerous to life, *per se*. But its train of secondary troubles are very annoying and disagreeable. It has no tendency to get well of itself.

It seems to *prevent* many subsequent attacks of frontal inflammation.

It is usually attended with headaches, however.

The sense of smell is lost in but slight degree.

Many unsatisfactory treatments of "catarrh" will be prevented by the recognition of this trouble.

Many patients will have ocular demonstration of their physician's skill if it is treated by systematic and operative interference.

TRANSLATIONS FROM CURRENT FOREIGN OTOLOGICAL LITERATURE. (ABRIDGED.)

By H. A. ALDERTON, M. D.,  
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CHOLESTEATOMA OF THE MIDDLE EAR. A GLANCE AT THE  
PRESENT STATUS OF THE CHOLESTEATOMA QUESTION  
TOGETHER WITH SOME NEW AND ORIGINAL  
OBSERVATIONS ON THE GENESIS OF  
THIS FORMATION.

Dr. Haug, Assistant Aural Surgeon Royal University Polyclinic at Munich (*Centralblatt f. Allg. Path.*, VI Band, 1895). The editors have asked me to report upon the present status of the cholesteatoma question, and my pleasure in responding is the greater because I have of late occupied myself specially with the subject in clinical and anatomical work, and am, perhaps, in a position in consequence of the wealth of material at my command, to advance some new principles.

This article will embrace solely the question of the genesis of cholesteatoma, and being in great part pathological and anatomical, will not enter the field of symptomatology or therapeutics.

There is really no pathological process in the organ of hearing which has so awakened the interest of pathological anatomists and physicians, and which has called forth such difference of opinion regarding its origin as cholesteatoma. For this reason, and also because, even at the present days, the cause of this formation does not appear to be fully explained; it will not be out of place to consider first, the several widely differing hypothesis which have been advanced in the course of the last decade. And I should like to add extracts from the wealth of material which I have gathered personally in ten years' observation, and

so, perhaps, we may succeed in coming a little nearer to the solution of a question which is already ripe, by reason of the results attained through united clinical and anatomical research.

First, let us come to a clear understanding of what we mean by a cholesteatoma. We understand it to be a growth which varies in size from a cherry stone to a pigeon's egg; which, even in exceptional cases, attains the size of a medium sized apple which is generally of round form or also (seldom) oblong; it presents a yellowish-white or more frequently a bluish-white appearance which may be compared to the tender luster of mother-of-pearl. It is not a compact molecular body which is the rule with true growths, but is composed of a great number of concentric lamellæ packed together in a manner resembling the shades of an onion; the lamellæ again consist of large polygonæ, flat epithelial cells which do not usually present a nucleus and which are the seat of attending cholesterine elements and micro-organisms.

Its favorite place of lodgement is the vault of the tympanum, the so-called recessus epitympanicus (Atticus) and the antrum of the mastoid. However, we sometimes find it in the auditory canal and in the inferior portions of the cavum tympani, either connected with collections in the aforesaid localities or as an isolated, independent foreign body. But, wheresoever the situation, it is always snugly encysted in the petrous portions of the temporal bone upon which it often works so deleteriously that we cannot attach too great importance to the danger of this process in its effects upon the general organism.

With regard to the genesis of this foreign substance—I avoid with intention the expression growth-Neoplasma, for reasons which we shall soon learn—Virchow's view, that it was analogous to the peculiar pearly epitheliomatous tumors of the petrous bone which often appear in the brain, meninges and other parts of the body<sup>1</sup> was formerly accepted because we have here to do with true heteroplastic growths of an epidermal nature when epidermic elements were met with on a spot where nature had not provided an epidermis, and, furthermore, where no epithelial cells existed. Only a few years ago he and a large number of pathologists and anatomists stoutly defended this

<sup>1</sup>I recently had the opportunity, accidentally, to observe a true pearly epitheliomatous-like tumor about the size of a small apple on the palm of the hand.

point of view when he laid much stress upon the relationship of cholesteatoma of the ear to dermoid and atheromatous cysts.

Virchow's view was somewhat modified by a few of its supporters who professed to see a congenital formation in cholesteatoma. Böttcher then tried to define it as a primitive development of the epithelium of the Aquaductus vestibuli; while Küster and Mikuliez tried to classify it with branchial cystoma, because epidemic elements might have found their way into the tympanic cavity at the time of contact with the upper branchial cleft, and in case of inflammation (in the cavity) its acute or chronic nature would so excite these previously confined epithelial bodies as to develop a cholesteatoma. These two writers also admitted the possibility of an independent development.

Then Von Tröltzsch, by reason of his clinical experience, contested these purely hypothetical views, and advanced the opinion that in most cases it was owing to a simple collection of old hardened pus and dead skin tissues which, exerting great pressure upon the neighboring parts, caused a transformation of the epithelium. In consequence of this pressure, cell elements would be developed with unusual rapidity, and in a metamorphosed form, and the growth would, therefore, assume the extraordinary resemblance to scaly epidermis.

It was to be expected that this theory advanced by the leading otologist of his time would be accepted wholly or with unimportant modifications by the greater number of aurists. Politzer then explained at least a part of the cholesteatoma thus: that from the congested mucous membrane of the tympanic cavity tubular involutions bearing epithelial germs were exfoliated, whose epithelium, when the opening into the canal was obstructed, ran into independent proliferations. As, however, in such a condition cylindrical epithelium usually results, the cylindrical epithelium is entirely transformed into pavement epithelium, and the cholesteatoma is formed by a transformation of the epithelium.

Again, Wendt looked for the origin of cholesteatoma in an analogy between it and its corresponding otitis externa desquamative; in a desquamative inflammation of the mucous membrane of the tympanic cavity, so that after the healing of the process as we have often enough observed, and which we shall specially note again, an epidermoidal transformation of the

former cylindrical epithelial germ-bearing membrane takes place, an independent growth is maintained and the cholesteatoma is formed.

Wendt's view has a certain leaning towards the opinions which obtain to-day. Also Lucae inclines to think as we do to-day when he said (rather obscurely, it is true,) that by means of the continual throwing out of granulation tissue a crystallization of the epidermis elements occurred, and that through the casting off and continual removal of these granulations of the epithelium lining the edge of the membrana tympani, a cholesteatoma might be found.

The most plausible explanation of the genesis of cholesteatoma, however, has been given in one day by Habermann. It seems to come nearest to the truth because it is based on facts, supported by clinical observation. According to this explanation a hyperplasia of the epithelium of the external ear is often formed in consequence of chronic inflammation, and this pavement epithelium in developing grows into the tympanic cavity through a perforation of the drum membrane. "When the inflammation continues the hyperplasia of the growing epithelium continues also and proliferates, thereby filling the entire vault with scaly, glistening masses." (Habermann c. l. c., p. 2.) This primitive development of the pavement epithelium may take place in the auditory canal as well as in the membrana tympani, and particularly on the epidermic margin of a drum perforation where, as I have often observed personally, the epithelium forms a callous, circum-vallated edge. Sometime after Habermann's explanation Bezold expressed an analogous one, and was of the opinion that cholesteatoma rested upon the to him established fact, thus: the epidermis developed and spread in great part along the floor of auditory canal and tympanic cavity. We shall see later that a growth is, indeed, often found along the floor, but for cholesteatoma that is not absolutely one of its conditions.

We conclude, that in a great number of cases, Habermann's idea may be substantiated thus: that in any chronic suppuration of the middle ear, no matter what otological condition called it primarily into being, the mucous membrane is transformed by means of a perforation of the drum membrane into an ulcerated surface, which at times, is partly divested of its superficial epithelium, and even increased and dilates. Now,

if at some undetermined time, the suppuration begins to involute, the tendency to healing will be exhibited by a casting off of epithelial cells on both sides, interiorly towards the cylinder epithelium and exteriorly towards the pavement epithelium. But, as the pavement epithelium has a greater tendency to increase along the floor than the cylinder epithelium; and then again, because a greater power of resistance dwells in the superficial epidermic layer than in the simple layer of epithelium lining the tympanic cavity; this scaly epithelium, so rich in cells, once formed, will not be less liable to withstand the deleterious and inflammatory renewals of this process, but on the contrary, it must and will proliferate, and the more particularly, as we shall soon see by my exhibition, when the peculiar conditions in which alone it can originate are visible.

But, according to Habermann, cholesteatoma can be developed in still another way; not as already stated, by the lining of the walls of the tympanic cavity with foreign epithelium, but by the formation through some extraneous opening of a sack-like pouch in the middle ear so that the cholesteatoma with its pavement epithelium rests on the normal cylindrical epithelium of the tympanic vault. Again it may be developed in two different ways: the hyperplastic epithelium on the edge of the perforation may turn in along the circumference of the perforation, or in some cases the edges of the lacuna may present granulations which may develop into granulations similar to those which cover the pavement epithelium, and form strong, dense, interlacing bodies, horn-like at the center which, in increasing may become a cholesteatoma. This was considered analogous to the epithelial molecules of cancrioid formations.

Finally, we have to mention the possibility that a cholesteatoma may develop solely and only in the auditory canal in consequence of some foreign substance lodged there, or more frequently by chronic irritation caused by impacted cerumen which forms the nucleus of a cholesteatoma; or it may develop as the result of a chronic purulent inflammation which wears away the periosteum and osseous frame-work of the bony canal and the osseous frame of the membrana tympani, thus escaping into the middle ear. The reason for this origin is, in my estimation, to be found in the dual vegetation of a cholesteatoma of the auditory canal. We see first a cholesteatoma which forms in the meatus, and which, for the sake of conformity, we must

regard as a cylindrical body, a concentric lamellated growth which grows outward with persistence, and exerts an ever-increasing pressure upon the osseous framework until it is ruptured. Then again we have a growth which follows the cylinder longitudinally, and which generally results in a rupture into the tympanic cavity. This can readily follow when any body seeks to escape at the point of least relative resistance; the relatively frail osseous frame of the membrana tympani is just the part to give way under pressure.

These are the expressed opinions on the genesis of cholesteatoma up to the present time. If we weigh these hypothesis in the balance we may say that the most recent, that of Habermann, seems the most probable because, being based on anatomical and clinical facts, it approaches nearer to the truth, although there is still much waiting an explanation.

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ORIGINAL CONTRIBUTION ON THE ANATOMY OF THE  
TEMPORAL BONE.

E. Zuckerkandl (*Monat. für Ohrenh.*, September, 1895). In the following lines a case is presented in which both sides of the squamous portion of the temporal bone are distinguished by peculiar formations. I begin with a description of the right os temporale, in which the anomaly shows itself in simpler form than on the other side. We see here, on the outer half of the meatus auditorius externus, and indeed just at the juncture of the posterior with the superior wall, a lacuna about as large as a hempseed, which puts the canal into communication with the recessus epitympanicus. Under this large lacuna we find a second smaller one, which also opens into the aforesaid recessus. From the large lacuna a deep, wide sinus runs out, which cuts through the lateral wall of the meatus auditorius externus. The region of the sinus is smooth, but tubercular. Both the lacunæ described belong to the class of congenital fissures of the external meatus, which I reported to this journal some years ago. While on the left side the real squama of the temporal bone preserves its normal condition, the right side has undergone the following changes: It has materially shrunk. The squama of the left side measures in the middle 32 mm., over the zygomatic process 35 mm., while the corresponding processes on the right side measure 14 to 19 mm. Further, the outline

of the squama does not form a simple arch, but has a deep incision at the seat of the smaller lacuna, so that the squama becomes two parts, the anterior being the smaller, and the posterior the larger. Corresponding to the retraction of the squama, the frontal diameter of the right parietal bone is visibly increased. The right os parietale has at the point of retraction a circumference (semi-circular) of 138 *mm.*, the left parietal bone, at the same point, only that of 120 *mm.* It is interesting to note that the retracted right squama of the temporal bone is cleft on the anterior smaller half into two laminæ; a median which, with the posterior squama, forms a corpus, and a thicker, lateral one, which, simply resting on the median, forms with it the margin of a narrow fissure; which, evidently not in a macerated condition, like the suture, holds connective tissue. The designated lamina cannot be wholly lifted from the primary bone because it has grown fast to the root of the mastoid process, and still deeper to the horizontal layer of the squama. When it is free, its margin is sometimes (partly?) smooth, partly dentated. The tuberculum articulare posticum<sup>2</sup> is similar, and also an attached part of the fossa mandibularis, the cortical layers of which are distinguished by serrated margins in the superior wall of the canal in the articular fossa only by a gap in the squama. A small medial portion of this circumscribed bone is separated from the lateral by a short suture. From the anterior marginal suture of the same, a sagittal joint overlaps the fossa mandibularis, which compared with the one on the other side is visibly smaller and appears flattened. This flattened part rests near the root of the mastoid, so that nothing can be seen of a tuberculum articulare anticum. Corresponding to this suppression, the right condyle of the inferior maxilla is smaller than the left. Behind the suture on the superior wall of the auditory canal, which rests on the margin of the tuberculum articulare posticum, we perceive two lacunæ, which open into the spongiosa of the superior wall of the canal, and which may be classified with the fissures in the canal on the other side. The mastoid process of the right temporal bone is divided in two. The posterior portion is normally united to the primary bone, the anterior portion forms

<sup>2</sup>Under the designation tuberculum articulare posticum is to be understood the process which originates between fossa mandibularis and os tympanicum and which varies greatly in size.

an independent little bone. When the right temporal bone is observed from the cranial cavity, one only sees that the squamous portion is smaller than normal; of the surface anomalies—the imperfect divisions by sutures into several parts—nothing is perceived. From this we conclude that the dismemberment must be designated as incomplete, and restricted to the cortical layers of the squama. There can be no doubt that in this case we have to do with a congenital anomalous ossification, which can only be thus characterized: That the newly formed superficial layers do not sufficiently unite with the parts already there or that a particular bony process, like the mastoid, must be established for this anterior portion. The lacunæ, which pierce the superior walls of the meatus auditorius externus, testify to insufficient ossification.

This anomaly was found on the skull of a 14 year old boy, who, we may judge from the appearance of the skull, had suffered from a caries of the pars basilaris ossis occipitis, the occipital condyle and the posterior of the sphenoid bone. In consequence of this process, the synchondrosis between the occipital and the sphenoidal formed too early.

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#### ACUTE ACOUSTIC NEURASTHENIA.

Report of cases treated in 1893 and 1894 at Prof. Gottstein's private polyclinic for ear, nose and throat, by Dr. R. Kayser, Breslau. (*Monats. für Ohrenh.*, September, 1895.)

A cabinetmaker, 33 years of age, was suddenly taken ill on June 11, 1894, with a passing giddiness accompanied by tinnitus aurium, and has loss of hearing in the left ear. Early on the 15th of June a second heavier attack, with vomiting, was experienced, which did not yield until the afternoon of June 16. On the 18th of June, when the patient came under observation, moderate giddiness was present. At the same time, nystagmus exists. This is particularly marked when the glance is directed upward or to the right, which also increases the giddiness, while both are diminished by a glance to the left. Moderate depression of the membrana tympani on both sides; hearing considerably worse on the left. Whisper = 30 cm. Weber; upon the skull, Rinné; positive, perceptive duration of bone conduction increased. No improvement in either giddiness or hearing

follows catheterization. Internal organs, as well as urine, in normal condition. Ophthalmoscopic examination conducted by an oculist reveals hyperemic optic nerves on both sides; field of vision normal, but somewhat contracted for color, besides some refractive anomalies. It might also be considered of causative import that the patient had smoked a strong cigar before the first attack. Upon the application of leeches to the left ear, there was a marked improvement of condition in a few days, particularly with reference to the giddiness. In about ten days the patient was able to resume work and withdrew from further observation.

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AN OPERATION FOR ADENOID VEGETATIONS FOLLOWED  
BY SEVERE HEMORRHAGE.

(*Monat. für Ohrenh.*, September, 1895.) A boy, 6 years of age, otherwise healthy, was suffering from adenoid vegetations, with enlargement of the tonsils. As the child was unusually unruly, the operation was done under chloroform anesthesia; that is to say, he was given enough to put him beyond resistance. Both tonsils and the adenoid vegetations were then removed. There was no hemorrhage to speak of, and in about three-quarters of an hour the patient was taken home and put to bed. Late the same evening, about ten hours after the operation, I was called to the child, who was bleeding without cessation from nose and mouth. I found the boy extremely anemic, waxen in color, bleeding freely from the nose, also vomiting large clots of blood. By applications of ice, etc., the hemorrhage was finally arrested, and the boy's life, so seriously threatened, was saved. The next day I discovered in the upper part of the posterior pharyngeal wall, and projecting into the naso-pharynx, a firmly attached bit of mucous membrane. This was removed with the forceps.

The operation for the adenoid vegetations was done with a Gottstein's annular knife. It does not follow, however, that the severe hemorrhage was caused by the pressure brought to bear upon some sensitive vessel of the vault by the bit of mucous membrane left hanging. It often happens, just when an operation is done with a Gottstein annular knife, that small or large tissues (pieces?) remain attached to the vault. It is certainly necessary to remove such bits, and it may readily be done with

a straight or curved forceps. Nevertheless, I have seen such bits remain without any recurrence of hemorrhage. It must result from peculiar accidental conditions.

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#### ACUTE DEAFNESS IN ONE EAR FOLLOWING MUMPS.

(*Monat. für Ohrenh.*, September, 1895.) A boy, 14 years of age, was seized on the eighth day of illness from mumps with severe meningeal symptoms, headache, vomiting, slow pulse (pulsus tardus), unconsciousness, accompanied by deafness in one ear. In a few days all the symptoms, save the deafness and occasional tinnitus, disappeared. The membrana tympani was perfectly normal. Weber: upon the skull; bone conduction for the watch, absent; no recognition of tuning-fork by air conduction on the right, and only heard on the left through the mastoid process. Perceptive duration of bone conduction visibly reduced.

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#### ASEPSIS IN OTOTOLOGY, RHINOLOGY AND LARYNGOLOGY.

Lermoyez and Helme (*Annales des mal. de l'or. et du Larynx*, June, 1895). The upper respiratory tract acts as a vestibule between the exterior and the interior of the organism. It is, therefore, not surprising that micro-organisms are met with in the normal condition. The bacteriological flora of these cavities has been studied by Netler, Chatellier, Zaufal, Fränkel, Gradenigo and Martha for the ear; Ryce, Freudenthal, J. Wright, etc., for the nose. The microbes are carried into these regions by the air, by food, and finally, by contact with the fingers and objects of use. The attempt has been made to calculate in what proportion the germs would be deposited in the nose by the simple act of normal respiration. With that object J. Wright made the following experiment. He examined the quantity of micro-organisms contained in 10 liters of the air of his laboratory and found 129 +. He then caused to pass through the nasal fossa an equivalent quantity of the air of his laboratory which he received at its exit from the nose. He analyzed this air and found no more than twenty-four bacteria for 10 liters. This experiment, though imperfect, gives us an idea of the great quantity of micro-organisms which the inspired air deposits in the upper respiratory passages. And this quantity

is still increased by the abundant deposition of germs made by the fingers and food, the invasion is thus formidably incessant.

Under these repeated invasions the organisms would soon succumb did there not exist in these cavities themselves a force of resistance sufficient to annul their effects. It was easy to foresee that one would find in these regions, badly defended from their situation, the bactericide power that has been observed in other organs. The recent researches of Wurtz and Lermoyez have demonstrated the bactericide power of the nasal mucus.

Therefore, normally, the mucus serves to protect the mucous membrane. It is a first line of defense sufficing in ordinary conditions without calling upon the tissues any abnormal effort. But if the attack is more violent, if the number and virulence of the pathogenic assailants are increased, the forces of resistance are multiplied equally. Then intervene the cellular elements, the leucocytes, whose abundant diapedesis realizes immunity by phagocytosis. To the hyper-secretion of mucus succeeds the production of muco-pus, then of pus.

However, there is a limit to this natural immunity, and the barriers may be forced in two ways: (1) When the number of the invaders is so considerable that the natural defenses, calculated for an attack less complete, succumbs to the number (as in the case in rhinology, in inoculation by septic instruments); (2) when a wound makes a break in these defenses and gives a free entrance to the microbes.

Now, it seems at first sight, that these two conditions of general infection are so often realized by oto-rhinological maneuvers that accidents following operations should be legion. Happily it is not so; thanks, especially to the force of resistance of the secretions and of the tissues, these accidents are relatively rare. We say "relatively" since if these accidents occur, they are out of all proportion to the truly considerable number of operations which are practiced upon the parts. They exist, however, and we could easily demonstrate their gravity.

But by the side of those which are known how many of them are there that are not published. This is all the more reprehensible in that it is in some sort held by the public that the operations of specialists do not admit of any attendant accident. How must we think, however, of purulent otitis succeeding to ablation of adenoid vegetations? What can one say also of the

transmission of syphilis by non-sterilized instruments? "Those who disregard the rules of asepsis are so much the more culpable that the means of disinfection are to-day more easy and numerous than ever."—Dupont.

It seems to us, therefore, that all these accidents could at least be avoided if special surgery adopted strictly the precautions used in general surgery. Up to the present this side of our art has been perhaps somewhat neglected, not that we have the unhappy preference of these practices; that is not what we wish to say, and the majority of us, on the contrary, strive our best to realize what we consider to be the ideal of preventive measures. But what prevents here their absolute realization, without which there is uncertainty and peril, is the *technique*. Now the application of aseptic measures is valuable only by the minutiae of its details. One must omit nothing at any moment of the operation, small as it may be, under pain of incurring the reproach of making only a farce of antiseptics. And this is more dangerous than complete abstention would be because it gives a false feeling of security. Do you wish an example to corroborate our opinion? Do you believe that one will have done all that is necessary because he has dipped an ear speculum, charged with staphylococci, into an antiseptic solution? With Martha we respond hardily, no. Has not that author shown that ear speculae taken at hazard after the customary cleaning, and even after they have lain some time in an antiseptic, retain all the different micro-organisms? And again, it is not always a question of the micro-coccus without spores dividing by fission. Those which are reproduced by spores are still much more difficult to destroy.

To resume, we would say that there are not two ways of understanding surgical interventions. As one could not conceive of a surgeon practicing an operation without profiting by aseptic methods, so the specialists themselves, in practicing surgery should equally apply the methods in current use in general surgery.

Therefore, in a specialty antiseptics is imposed, but still more asepsis. It is especially to the latter that we should have recourse. One must not forget that this special ground is rather unfavorable to antiseptics. The great sensibility of the mucous tissues of the nose, ear and pharynx permit prolonged contact only with very weak solutions. Again one must reckon, and

it is a most important factor, with the intense absorption power of the mucous tissues.

The absorptive power of the mucous membrane of the tympanum is not less great than that of the nose. Mercurial and cocain poisoning has taken place through solutions introduced into the tympanum. For these reasons asepsis is superior to antisepsis.

However, asepsis is oftenest neglected because one fears to complicate still more a technique already complex enough in itself. This is an error. One can nearly reach perfection by simple methods. We have long studied this question; our work has aimed to popularize the means which we have employed to render this method practical and in some sort elementary.

One may divide the procedures which belong to our specialty into three categories: (1) The examinations; (2) the operations by natural means and by artificial means; these last, among which we will cite tracheotomy and mastoidotomy, belong to general surgery and call for the employment of ordinary procedures; (3) the dressings. We have, therefore, to consider how to regulate the method of examination. To use it we have seen that it needs only care and patience, and above all, conviction.

In general, four things have to be considered before reaching the solution of the problem of asepsis: (1) The physician; (2) the patient; (3) the instruments; (4) the dressings.

1. *Disinfection of the physician.* It is impossible and illusory. If one requires it one does not obtain it. Imagine, for example, an otologist receiving his patients in his office with his arms bare, in his blouse, the hands wet as though a laparotomy was to be performed. Now, it is in the office that the ordinary operations are practiced. These ordinary operations call for the strict application of the rules of asepsis, yet this latter, as one habitually understands it, is impossible; but if one wishes to apply it with the best will in the world all these precautions would become useless. At any instant, indeed, if the patient moves it is necessary to readjust the head conveniently. During this short maneuver the field of operation is no longer illuminated; it is necessary to move the head-mirror with the hand. Ten times, therefore, in the course of an operation the hands become soiled and it is necessary to

wash them, surgically; ten times—an impossible thing, especially if one considers the loss of time, and the anxiety of the patient who waits cocainization, etc.

Happily, we are able to pass by the precautions in use in general surgery. It suffices to imitate the bacteriologist. The bacteriologist has not aseptic hands, only he does not touch with his hands the culture mediums, and he only arrives at this by the mediation of sterilized instruments. We have only to do likewise to prevent the introduction of germs into the operative field.

It is well understood that after having seen a patient one must always take care to wash the hands, to scrub them with soap, sublimat, etc., but only with a view to cleanse them of blood and mucosity; in a word—it is neatness, not asepsis. Therefore, the asepsis of the physician is not imposed habitually; it is always indispensable when it is necessary to introduce a finger directly into a natural cavity, for example, before practicing the rhino-pharyngeal touch for adenoid vegetations or before effecting intubation. In these cases the hands should be sterilized. *Apropos* of the rhino-pharyngeal touch, Lemoyez has shown the course to be pursued. And he has observed a case in a child, 5 years of age, where a simple examination of the naso-pharynx made by a student in his service who had neglected to sterilize his hands, caused to break out the same evening an acute purulent otitis which lasted a month, and in the course of which the trephining of the mastoid seemed a pressing necessity, made otherwise more remarkable in that never before had the child had the least otitic complication.

2. *Disinfection of the patient.* Here there are many reservations to be made, and in all cases one is confronted with numerous difficulties. Asepsis imposes itself where there is the smallest operation to be performed. The difficulties are not only numerous, but they vary according to each region.

For the canal the technique has been established by Zaufal. He soaps the canal with a brush, he rinses then with absolute alcohol, and finally pours into the ear a concentrated antiseptic solution of sublimat, for example, of 1 to 500. The procedure is perfect, it should be utilized every time that one approaches the tympanum.

And, indeed, if the middle ear does not contain pus it is sure to make it suppurate to place it in communication with an

auditory canal naturally and constantly infected; and if the discharge of the otitis is purulent it is risking, causing this to pass into the chronic state in exposing it to the secondary staphylococcic infection which will come to it. Moreover, the repeated instillation of carbolated glycerin, 1 to 20, made in the canal several days before practicing paracentesis, or before the spontaneous rupture, is an excellent means of realizing this asepsis so indispensable to the canal.

Difficulties much greater impede the disinfection of the nose and naso-pharynx. It is the habit to be content with the common place douche of Weber. Its antiseptic value is easily subject to doubt. Two cases are presented.

1. Where resection of the nasal septum is indicated, for example, in a nasal fossa whose mucous membrane is healthy. In this case the previous antiseptization of the nose is useless; it is impossible to render the nose more aseptic than it is normally. In spite of the great quantity of germs deposited from the current of inspired air, a drop of mucus examined by the microscope shows only an insignificant number of micro-organisms, and sown in gelatin are almost never cultivated. One might say of the preoperative nasal irrigations prescribed that they constitute almost a contra-indilation since they sweep away the mucus and hinder the natural antiseptis which is performed in the nasal fossæ.

2. Again where one operates in a nasal fossa full of mucus. Here nasal irrigation justifies itself, but one must demand of it only what it can give—mechanical cleansing, but not real asepsis, and this asepsis is unrealizable for three reasons: first, because the washing of the nose, whatever method is employed, only affects the inferior portions of the nasal fossa; it does not penetrate into the meatus, neither into the olfactory cleft, still less happily into the canals from the eye, ear or sinuses which open into the nose. Again, because, as Jarniko has demonstrated, the aqueous solutions do not come in contact with the microbes, protected by the stratum of mucus in which they lie, and consequently cannot destroy them. Finally, the time being necessarily only short in which the nasal fossa is bathed in an antiseptic liquid, this must, to have any serious effect, be so concentrated that the mucous membrane could not bear it. Moreover, we know since the works of Bumm on septic peritonitis that the strong antiseptic solutions only tend, contrary to what

one expects of them, to favor the infection. For if they do not remain long enough in the nasal fossæ to destroy the microbes in them, they have the time to provoke necrosis of the epithelium, to annihilate its biological functions, to favor sloughing and thus open a door to infection.

We do not, however, systematically reject nasal irrigations, but we recognize in them only a limited antiseptic value. To the solutions principally employed for this purpose, to borated water whose bactericide power is in a manner equal to zero, to the weak solution of sublimat 1 to 10,000, so painful to the pituitary membrane, to carbolized water 1 to 200 which leads quickly enough to anosmia, we would prefer a solution of pheno-salyl 1 to 1,000; the nose bears it well and its antiseptic strength is under these conditions relatively great. By adding 6 grammes of chlorid of sodium to the liter to this solution:

Pheno-salyl.....	1 gramme.
Chlorid of sodium.....	6 "
Boiled water.....	1 liter.

One prevents the absorption and consequent necrosis of the nasal epithelium.

The least inefficient procedure to obtain a relative asepsis of the nose, however, seems to us to be insufflation of antiseptic powder such as aristol or iodol several days in advance; these have the advantage of stimulating the secretion of mucus and of destroying the microbes, in part directly and in part indirectly.

As to the antiseptic effect of ointments it seems to us to need to be established by a serious experimental demonstration. As recently, Ceppi has proved that certain antiseptics, such as carbolic acid, completely lose their bactericide power when they are mixed with a fatty body.

The same difficulties occur in the pharynx. It is easy to understand that all asepsis is naturally impracticable here.

To sum up preoperative asepsis of the upper respiratory tract is almost impossible, in fact, if one wishes to make it strictly. Perhaps the advantage of the powders over the irrigations resides in the fact that instead of sweeping away the mucus the powders augment the secretion. One must not, however, be contented with this natural solution of the question. We should, on the contrary, give all our attention to the two following

points which we must still consider, that is, the sterilization of the instruments and the dressings.

3. *Sterilization of instruments.* Is it sufficient to summarily wipe the instrument which is withdrawn from the nose and plunge it in an instant into a sublimat or carbolic solution, etc.? No! If we take the *aurens*, the most of all the microbes that we encounter habitually, and if we put it in weak solutions of creolin, carbolic acid, etc., we find that all the current antiseptics have little action upon it. Passing through a flame, as advised by some, is only applicable to a very few instruments. And even in these Zaufal has observed that to sterilize a stylet infected by the pus of tuberculous otitis it is necessary to heat it to a red-white heat.

The method which we employ is the following: It is eclectic and varies with the nature of the instrument. These are of two sorts:

1. Metallic instruments—Speculæ, catheters, forceps, snares, etc.

2. Non-metallic instruments—Hard rubber catheters, bougies, brushes; mouth-pieces for the Politzer bag, etc.

For the first series we utilize sterilization *by heat*. For the second, *by cold*. We employ finally a particular procedure for mirrors, syringes, etc.

1. *The sterilization of metallic instruments.* First, brushing and careful cleansing. When the instrument is hollow the interior must receive great care. The catheters, snares, etc., should be sponged. The same preliminary precautions should be taken before using Bosworth's saw or electric trephines; each tooth should be cleaned. This done, what mode of sterilization is to be preferred?

Sterilization with the dry bath (bath of Ponpinel, of Mariand) is excellent when the operation is done at home either to remove adenoids or to trephine the mastoid. The instruments are sterilized in a metal box the evening before; but as it takes an hour to sterilize by this means, and then more than a half hour to cool the apparatus, the proceeding is impracticable for ordinary use. As one may have a number of patients, not to mention the clinics, it would require a series of Ponpinel's baths and an incalculable number of instruments. Moreover, a great inconvenience in this proceeding is the distemperring of cutting instruments which occurs. Finally, if the regulator upon which

one depends is not perfect, the temperature quickly reaches  $200^{\circ}$ , causing the complete loss of the temper of the instruments.

With the object of remedying this imperfection in the sterilization by bath, we have had the idea of employing sand baths, a means employed by chemists to obtain a more constant temperature.

A second method of sterilization consists in the use of steam, either, as Zaufal did, with the steam of running water or steam under pressure. The first of these methods is rapid enough, fifteen to twenty minutes suffices; this is still too long. Moreover, this proceeding is liable to a grave objection: that after sterilization there is deposited a decided layer of rust upon the instruments if they are not nickled. And even with those which are nickled, it happens very frequently that at certain points the coating is not complete, in this case there are spots of rust often difficult to remove.

When vapor under pressure is used, the autoclave is used. This means is without doubt very rapid, nevertheless it is known as a very complex apparatus of very delicate management. It requires constant surveillance, and this is hardly possible in the confusion of a clinic. Besides the real danger of using it, we must admit that the sterilization may be illusory if the assistant to whom falls the disinfecting, has not taken care to drive out all the air from the apparatus. Finally, the instruments are often spotted with rust.

The favorite sterilizer seems to us to be boiling water. The proceeding is more rapid, the most convenient, and the most perfect in practice. Any alkaline salt added to the water will prevent rust; the one generally used is carbonate of soda. Nothing in practice equals this method for simplicity and efficacy. It is sufficient to plunge the instruments at the moment when it begins to boil. Thanks to this solution of carbonate of soda at one per cent, the boiling point becomes higher than that of water ( $104.6^{\circ}$  instead of  $100^{\circ}$ ). At that temperature, in a few minutes, all the germs are destroyed, and that is the thing to consider. Finally, the last advantage of the alkaline solution, a very appreciable advantage, is that it dissolves the mucus which adheres to the instruments, and besides, by the occasional stirring up by the boiling, it assists the mechanical cleansing of the latter.

According to Davidsohn and Ichimmelbusch, the spore of the anthrax bacillus is destroyed in two minutes. Therefore, five minutes boiling at the maximum, suffices to obtain complete sterilization; two or three seconds alone suffice for an instrument simply soiled by pus. Upon leaving the solution, the instruments which have been taken out by forceps should be plunged into a cold solution, which will suffice to maintain asepsis. The solution we employ is naphtholated water, 1 to 2,000, or carbolated water, 1 to 100. The instruments thus surgically cleansed can await without fear of contamination the time of using again.

Aluminum instruments cannot be sterilized in alkalin baths, as the latter dissolves them in warmth, separating the hydrogen. It is, therefore, a serious inconvenience to employ this metal in the construction of ear speculæ, etc.

The means that we have just indicated will serve equally well for edged instruments, since they bear boiling very well; unhappily, the mechanical stirring up incident to boiling may blunt their edge. To avoid this, one has only to wrap the blade in a little absorbent cotton.

But for the more delicate instruments such as paracentesis needles, one can simply use ordinary chloroform. In a large-mouthed bottle, one places a thick layer of cotton, well pressed down upon the bottom. Then fill the bottle with chloroform and, just before performing paracentesis, place the needle therein. When the disinfection of the canal and the cocaine anesthesia has been attended to, the needle will be sterilized.

2. *Sterilization of non-metallic instruments.* This is a great question for specialists. Indeed, if one has used a mirror on a tuberculous patient, and if the mirror has not been rigorously asepticized, one risks inoculating tuberculosis. The same holds with syphilis in its two first stages. The sterilization of the mirrors should be pushed so much the further in that the microbes penetrate deeply into the interstices of their setting and there escape more easily the bactericide action.

Now, ordinary mirrors do not support boiling; in a few minutes they lose their brilliance and are covered with spots. This is because of the layer of air between the mounting and the glass, becoming heated at 100° and producing a gap here at the time of cooling; the alkalin liquid is sucked in here and put in contact with the back of the tin-foil, which is thus rapidly

deteriorated. We may establish the rule that all mirrors exposed to either dry or moist heat are destined to rapid deterioration in consequence of the unequal co-efficient of dilatation of the backing and of the glass and the inevitable separation which comes from it.

We have therefore been forced to have recourse to the cold antiseptic solutions for mirrors.

These solutions serve, besides the mirrors, for objects in hard rubber, for the soft sounds of Weber-Liel and for bougies for the Eustachian tube.

What antiseptic agent should be employed? We have searched a long time, since the solution should fulfill certain conditions. First, it should be very active, without attacking the metal. Then, and this is a capital point in children, it should not be poisonous. We must bar out carbolic acid, whose 1 to 50 solution alone is efficacious; first because it has a very strong odor, of burning the mucous membrane violently, and finally of deteriorating the hard rubber instruments. It renders them rough and harsh. The same fault is found with lysol and creolin. Sublimat remains, but it is toxic and attacks the metal of mirrors. We have chosen pheno-salyl in a solution with water of one per cent. This antiseptic has been discovered and well studied by Dr. de Christmas, of the Pasteur Institute. The composition is as follows:

Carbolic acid.....	9	grammes
Salicylic acid .....	1	"
Lactic acid .....	2	"
Menthol.....	0.10	centigrammes

Dr. Christmas has found that tuberculous sputa mixed with five times its volume of a two per cent solution is sterilized in fifteen minutes, and its inoculation into guinea pigs is inoffensive.

This agent has a very great bactericide action, it is not toxic and, finally, its odor is agreeable. Pheno-salyl well prepared, and this preparation requires a certain skill (heating the three acids together until liquified and then adding the menthol; the product is soluble in water in the proportion of seven per cent, and in all proportions of alcohol and glycerin—Bardy), should dissolve totally in water, without leaving free globules of raw carbolic acid. This solution has the advantage of being made extemporaneously cold without necessitating special precaution.

The mouth-pieces, the catheters and the mirrors should be plunged into a cold alkaline solution, which dissolves the mucus. Then dried with cotton, which is immediately destroyed. Then plunge the instruments into a jar containing a one per cent solution of pheno-salyl. For greater precaution, one should leave them there much longer than Christmas recommends. Even forty-eight hours without damage. The only inconvenience with pheno-salyl is that it attacks steel after a time; it forms a salicylate of iron, which blunts the edges. This solution does not serve, therefore, to cool instruments after they leave the boiling water. Naphtha and carbolated water serve perfectly in this case. But pheno-salyl may be used to sterilize the cautery and other handles without fear of harm to the copper mountings. This is valuable, as nothing is more difficult than to disinfect the mountings of galvano-caustic instruments.

The Eustachian catheters may remain indefinitely in this solution. We keep them there permanently, stuck in a tripod holding a plate with numerous holes, enclosed in a jar filled with a solution of pheno-salyl. They are taken out at the moment of using and afterwards sponged and placed in another bottle containing a similar solution; they remain there several hours, being afterward returned to the aseptic catheter carrier.

The bougies for the dilatation of the Eustachian tube are bathed in the same liquid. To facilitate, we have had a rack constructed, with seven tubes. Six contain the celluloid bougies graduated from 1 to 6; the seventh, larger, receives the bougies which have been used, to prevent their being again used in the same operation.

The *disinfection of syringes* and other analogous instruments intended to wash the ear and the nose, require sometimes hot and sometimes cold sterilization, according to the character of the instrument.

We have had constructed an aseptic syringe whose piston is encased with mountain flax. The cylinder is very short, but large, that the syringe may remain easily managed, and containing sufficient liquid to conveniently wash the ear. Warm sterilization is used for this instrument. The syringe should be placed in a bath of carbonate of soda solution, 1 to 100, cold, after being completely filled with the same. Carry it then to the boiling point and maintain it there for five minutes. If the syringe is sterilized empty or if it is suddenly plunged into the boiling solution the glass cylinder will break.

This sterilization could not be repeated at each dressing, therefore we take care that the syringe does not come in contact with the infected cavity: this is easily managed since the canula is replaced by a metallic tip to which is adapted a conical cap of soft rubber, which is changed for each patient, avoiding all traumatism. The injection over, the cap is withdrawn and placed in the pheno-salyl solution. The syringe is placed in a phial of naphtholated water, where it remains aseptic. It is sufficient to sterilize it after each consultation. Moreover, this continued immersion keeps the packing of the piston moist and in order.

For washing the nose we have had an apparatus constructed that we believe answers all the requirements of good asepsis.

This consists of a glass cylinder terminating superiorly by a tube which encloses a tampon of cotton; at its inferior portion, equally slender, is applied a rubber tube, to whose free extremity is fixed a nasal canula of glass. This is constantly plunged into the pheno-salyl solution of one per cent. The apparatus is affixed by means of tenons to a metallic tube supplied with a groove permitting thus the free play of the douche-vessel, that may descend or rise to the required height and be solidly fixed with the help of a pressure screw.

#### 4. *Sterilization of dressings:*

1. Sterilization of the water—It is also necessary to have aseptic water at hand. The most practical process is boiling for twenty minutes, which is sufficient for ordinary practice, but to-day we employ two successive boilings of twenty minutes each.

2. Sterilization of cotton—For the nose and ears, one is daily called upon, either in the course of an operation, or afterward, to make use of tampons of absorbent cotton. How shall we sterilize it? We have an assistant roll small tampons into pear-shape. These tampons, placed in a closed large-mouthed bottle, are placed either in Lautenschläger's circulating vapor bath, which has the advantage of not requiring too much watching, or more simply into a sand bath. When the sterilization is obtained, it suffices to keep the bottles carefully corked; removing the tampons for use only with forceps duly sterilized.

But there are cases where one is obliged to use tampons mounted upon an applicator. Usually one uses an applicator upon which the cotton is rolled with fingers more or less clean.

To remedy this inconvenience, we have conceived of utilizing the igneous properties of boric acid. Alcohol at ninety per cent is saturated with boric acid. When a tampon is required it is plunged into the alcohol thus prepared and ignited; at the moment when it begins to carbonize it is sterilized.

We must finally speak of the preparation of aseptic solutions of cocain. We dissolve the cocain, at the moment of using, in a carbolic acid solution of 1 to 200. We measure the cocain with little spoons holding exactly five centigrammes; adding to that quantity 5, 10, 20 drops of liquid to obtain extemporaneously a solution of 1 to 5, 1 to 10, or 1 to 20.

This may appear complicated and we acknowledge that our asepsis is as delicate as surgical asepsis; but it is imposed like the latter and it never occurs to a surgeon that these precautions are tiresome.

Nothing justifies better the necessity of the aseptic precautions that we are constrained to take than the statistical results made at our clinic during fifteen months.

ABSTRACTS FROM FOREIGN CURRENT  
OTOLOGICAL LITERATURE.BY T. MELVILLE HARDIE, M. D.,  
OF CHICAGO.PILOCARPIN IN DISEASES OF THE MIDDLE EAR AND  
LABYRINTH.

Schirmunsky (*Monats. für Ohrenheilk.*, February, 1895, *Journal of Laryngol.*, June, 1895) reaches the following conclusions: (1) It is only in recent affections of the labyrinth, from whatever cause they arise (syphilitic, traumatic, secondary), that we can expect beneficial results from subcutaneous injections of pilocarpin, and this is the more certain the earlier the treatment is commenced. (2) No good is effected by pilocarpin either by subcutaneous injections or by the introduction of pilocarpin into the tympanum in old-standing affections of the labyrinth, and in the so-called dry middle-ear catarrh where persistent changes have taken place. In dry middle-ear catarrh subcutaneous injections were employed in two cases, intra-tympanic injections in twenty-five cases, but with no better results than were obtained by the ordinary alkaline injections; subcutaneous injections were employed without benefit in four cases of secondary disease of the labyrinth. Improvement was obtained in two cases—one of traumatic effusion into the labyrinth, and the other from syphilis.

In a discussion on the treatment of nerve deafness in the Section of Otology of the British Medical Association, Dundas Grant (*Journal of Laryngol.*, September, 1895) reported that he had used pilocarpin with good effect in recent exudations and deafness accompanying mumps. It might be used with advantage in labyrinthine congestion and in early cases of acquired syphilis. It was contra-indicated in anemia and

advanced tertiary disease. MacNaughton Jones and Barr had seen no benefit from its use, while Field stated that he certainly had had some good results from pilocarpin and believed that in selected cases treatment would prove satisfactory.

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PROCEEDINGS OF THE INTERNATIONAL CONGRESS OF  
OTOLOGY.

At the International Congress of Otology held at Florence, September, 1895, Politzer discussed *Pathological Changes in the Labyrinth*. The paper was translated by Dundas Grant for the *Journal of Laryngol.*, November, 1895, and the reader is referred to that journal for the complete paper.

Our knowledge of the pathological changes occurring in the labyrinth dates scarcely further back than the second half of this century, because of the earlier imperfections of microscopic methods and because we have recorded only a very small number of anatomical demonstrations on individuals submitted to clinical observation during life.

The changes in the labyrinth comprise: (1) Hyperemia; (2) hemorrhagic extravasations into the labyrinth; (3) inflammations of the labyrinth, both primary and secondary, with their results.

*Hyperemia.* Of importance clinically because it may give rise to subjective noises, to vertigo and to disturbances of hearing. Eichler has demonstrated that the labyrinth possesses a complete vascular system of its own. It has, however, anastomotic relations with neighboring parts, especially the tympanic cavity. The special vascular system is the normal seat of hyperemia such as occurs in certain infectious forms of otitis, but especially in typhoid and diphtheritic scarlatina. Other causes of labyrinthine hyperemia are: (1) Cerebral tumors, which cause pressure on the venous channels of the brain, or by proliferating into the internal auditory meatus, the internal auditory artery and vein; (2) the influence of the nerves, especially the sympathetic; (3) acute and chronic inflammations of the tympanum.

*Hemorrhagic extravasations.* These are met with most frequently in infectious diseases, such as scarlatina, diphtheria, smallpox; in acute tuberculosis, chronic nephritis, diabetes, leukemia, and in circulatory troubles arising from organic affec-

tions of the heart and lungs. They are found frequently in chronic suppurations of the tympanum. The anatomical basis of Menière's disease is wanting, except for the one case described by Menière; we must, therefore, speak only of Menière's group of cerebral symptoms. It has not yet been demonstrated that the labyrinthine symptoms which follow the administration of certain drugs (quinin, etc.) are produced by hemorrhages into the labyrinth; our presumptions are based upon Kirchner's experiments on rabbits.

*Inflammation of the labyrinth.* Our information, as far as primary inflammations are concerned, applies only to their results. The pathological changes in secondary inflammations are the result of acute or chronic infectious diseases or of tympanic inflammations. The changes are seen chiefly in the lower parts of the cochlea. The anatomical changes produced as the result of infectious diseases arise either from the invasion of specific microbes, or from that of purulent matters in the labyrinth, causing inflammation of the capsule and membranous portions. This may produce connective tissue and terminate in ossification; then a necrosis with degeneration of the tissue brought about by capillary thromboses or by direct action of the virus. The special studies of Moos in diphtheria and measles are particularly valuable and convincing. Heller demonstrated that the deafness which results in cerebro-spinal meningitis was produced by a suppurative inflammation of the labyrinth. Politzer has pointed out the frequency of secondary affections resulting from chronic suppuration in the middle ear, either with or without appreciable lesion of the labyrinthine wall. Politzer has also demonstrated the variety produced by an obstacle, *e. g.*, cancer, in the internal auditory meatus, which compresses the blood vessels in that situation. In a preparation made from a man who died of leukemia there were: (1) A new formation of connective and osseous tissue in the tympanic scala of the cochlea; (2) complete invasion of the semi-circular canals by connective tissue; (3) the accumulation of lymphatic cells in the interior of these canals, in the vestibule and in the vestibular scala of the cochlea. In syphilis the best known changes are hyperostosis of the temporal bone, with narrowing of the labyrinthine cavities and of the internal auditory meatus produced by chronic syphilis; and a proliferation of the labyrinthine capsule, with narrowing of the fenestra

ovalis, terminating in ankylosis of the stapes. When tuberculosis perforates the capsule the inflammation produces on the one hand necrosis of the tissues, and, on the other, proliferation of newly-formed connective tissue, which entirely fills up the spaces. To this list must be added the primary affection of the capsule described by Politzer at the Congress of Rome. The new osseous proliferations begin about the fenestra ovalis, causing ankylosis of the stapes, and in advanced cases penetrate into the labyrinth, notably into the scala tympani. In conclusion, Politzer alluded to the depression of the membrane of Reissner as the result of extra-labyrinthine pressure on the organ of Corti, first described by Steinbrügge.

Gellé read an exhaustive paper upon *general constitutional treatment in diseases of the ear* in which, among other subjects, he referred to acute diseases occurring in the course of the eruptive fevers and recommended careful treatment (irrigation, etc.,) of the nose and naso-pharynx. He expected something from the application of the serum treatment in these cases. The importance of intestinal antiseptics (calomel, salol) was urged. In acute otitis he usually gave quinin, but in influenza antipyrin. Great importance was attached to constitutional treatment in syphilis, tuberculosis, gout and diabetes. Hypnotism, though occasionally of value in slight cases of functional deafness, had never benefitted severe ones.

*The results of intra-tympanic operations for deafness following suppurative otitis media* was discussed by Avoledo. Improvement in audition followed extraction of the malleus and incus, with the addition of pilocarpin to favor absorption. Gellé contended that many cases were kept up by intra-mastoid suppuration and urged early complete operation upon the apophysis. Dundas Grant thought there were many simple operations (*e. g.*, section of a tight band running backwards from the short process of the malleus) of great value apart from the classical removal of the ossicles. Arslan, Ferreri, Delstanche and Délie favored caustics, chromic acid, nitrat of silver, chlorid of zinc and lactic acid (50%). Politzer said that he had never advocated pilocarpin excepting for labyrinthine disease. The frequency of intra-tympanic adhesions and bands such as those mentioned by Dundas Grant necessitated surgical interference, although the hearing was not always improved by

removal of the ossicles. It was of great importance that the Siegel speculum be employed to test the degree of fixation of the various parts.

*On internal treatment in cases of otitis interna.* Gradenigo discussed the subject in his paper in a general fashion, but presented no new facts. For syphilitic cases he advised intramuscular injections of perchlorid of mercury. Cresswell Baber narrated a case in which deafness accompanying myxo-edema yielded to thyroid treatment. Dundas Grant emphasized the importance of recognizing the nerve-deafness due to extreme debility in which cases pilocarpin should be scrupulously avoided. Strychnin in large doses was valuable.

*Liquid vaselin in the treatment of affections of the middle ear.* Since C. Delstanche had used this treatment in acute cases he had performed paracentesis less frequently. Habermann uses up to 50 centigrammes at a time; twenty-two out of thirty cases were greatly improved, tinnitus relieved in eighteen, vertigo diminished in nine. The treatment was indicated in serous, not in sclerotic catarrh. He introduced liquid vaselin through a catheter by means of a well-fitting syringe, and followed this with the air douche. Dundas Grant used a Weber-Liel's intra-tympanic catheter so as forcibly to break down existing adhesions. While the patient should be spared all treatment in sclerosis there was a class intermediate between this and exudative otitis in which treatment of this sort was experimentally justifiable.

*The treatment of intra-cranial abscesses following purulent disease of the middle ear.* The subject was elaborately considered in a paper by Barr (Glasgow) who, however, omitted definite reference to the work of German otologists. The following conditions can be successfully dealt with: (1) Abscess in the cerebrum, especially in the temporo-sphenoidal lobe; (2) abscess in the cerebellum; (3) purulent formations at the base of the skull, either (*a*) between the bone and the dura mater (so-called extra-dural abscess), or (*b*) between the dura mater and the surface of the brain (sub-dural abscess); (4) infective thrombosis of the sigmoid sinus even when secondary foci may exist elsewhere.

In all of these conditions it is essential, as a preliminary operation, to explore the cavities of the middle ear by removing the outer wall of the antrum. With good reflected light the

tegmen tympani et antri and the bony partition of the sigmoid groove are to be carefully scrutinized.

*Modes of operating:* In abscess, meningitis or septic thrombosis "follow up the path of invasion" by means of a globular rotating burr propelled by a dental engine. In this way the dura mater or lateral sinus need not be injured, although exposed. When working deep in the bone a sharp gouge is frequently useful.

*Extra-dural abscess.* During the last seven years thirty-nine cases have been reported operated upon and followed by recovery.

*Septic thrombosis of sigmoid sinus.* Extra-dural abscess in the situation of the sigmoid groove is generally associated with septic thrombosis of the sinus. If this exists the jugular veins may be ligated, or the freely exposed sinus slit up, the thrombus removed and the sinus stuffed with iodoform gauze. There are thirty-six recorded cases of successful operation.

*Intra-dural abscess.* If lepto-meningitis is present it is generally too diffused to permit thorough removal of the pus, and these are the least hopeful of all intra-cranial complications in ear disease, but thorough operation gives the patient a chance, sixteen successful cases being recorded.

*Cerebral or cerebellar abscess.* The diagnosis of an uncomplicated abscess in the temporo-sphenoidal lobe can be made with certainty. To deal efficiently with it the skull should be trephined above the ear in addition to the enlargement of the tegmen opening; in the case of the cerebellum the trephine opening should be made behind the sigmoid sinus.

*Mixed cases of intra-cranial disease.* Many cases are of a mixed character and exact diagnosis is difficult. If lepto-meningitis co-exist with abscess the symptoms of the brain abscess are marked, and Barr believes that the middle and posterior fossæ should be exposed and pus sought for. During the last seven years at least fifty-nine cases of cerebral abscess and seven cases of cerebellar abscess have been successfully treated. Many of these were complicated with septic thrombosis of the sigmoid sinus, some with meningitis. There have been in all, in seven years, at least 158 cases in which operations followed by complete recovery have been performed for the relief of the intra-cranial complications of purulent ear disease.

In the discussion Brieger mentioned the lumbar puncture of the spinal canal for the detection of meningitis. Operation should be avoided if it existed. Goris disagreed and cited cases in which the meningitic symptoms were marked, while, after death, no diffuse meningitis was found. Gradenigo was strongly of the opinion that cerebral abscesses should be reached directly through the cranium and not through the tegmen tympani.

*On the functional examination of the hearing power.* Gradenigo described his apparatus. He has each tuning-fork mounted on a frame, and adapted to it an apparatus like a fork which compresses the blades. When released they expand with a definite amount of force, and, therefore, begin vibrating with a constant intensity. Four degrees of compression and four of initial intensity of tone can be produced. According to the degree required for the patient to hear it the hearing power could be measured sufficiently near for all practical purposes and the amount very simply expressed in numbers. Dundas Grant suggested that the appliance be so regulated that normally the fork should be heard at a definite distance. The distance at which the patient could hear might then be noted and the ratio obtained.

*Local massage in the treatment of chronic eczema of the ear.* Bronner described and praised the process. The vibrations may be produced by hand or motor. A thick silver probe, armed with absorbent cotton smeared with mercurial ointment being employed. The vibrations should be rapid, about 700 per minute, and continued for from one to five minutes. The treatment is repeated daily until the skin is red and swollen, when it is to be omitted for a few days. As a rule, six or seven sittings are employed. Daly (Pittsburg) used the following: Hydrarg. ammon-chlor., hydrarg. sub-chlor. āā gr. j; "cold cream" ʒi. To avoid failure it should not be applied to a dry skin.

ABSTRACTS FROM CURRENT AMERICAN AND  
ENGLISH OTOLOGICAL LITERATURE.BY LEONARD A. DESSAR, M. D.,  
OF NEW YORK.

## ACUTE SUPPURATION OF THE MIDDLE EAR.

Dr. S. S. Bishop (*Medical Standard*, December, 1895,) calls attention to the fact that boracic acid sometimes produces irritation and pain in aural cases. He reports a case of acute mastoiditis in which, after operation, the wound was dressed with finely powdered boracic acid. On the following morning patient stated that he had suffered much pain in the wound and attributed it to the medicine with which it had been packed. Upon removing the dressing and substituting aristol he enjoyed entire relief from pain. At the next dressing, however, the author returned to the boracic acid without mentioning the change, intending to satisfy himself whether it was the acid or something else that caused the trouble. The next morning came the same report of a bad night, pain and sleeplessness. Several times he alternated between these two remedies until it was conclusively demonstrated that there are persons highly susceptible to boracic acid, as well as to iodoform. This experience led him to the use of aristol in acute suppurative inflammation of the middle ear, and after extensive use he has come to depend upon it almost exclusively, considering it the best cicatrizant at our command.

## INTRA-TYMPANIC DISEASE.

Dr. Joseph E. Willetts (*Pittsburg Medical Review*, July, 1895,) in an exceedingly instructive article points out the impracticability of massage as a routine treatment in otitis

media catarrhalis chronica. This form of otitis might be said to assume a chronic character from the beginning, and the impairment of hearing is often so slight that the patient neglects to seek advice until the morbid changes have done irreparable damage. On examination the short process of the malleus is prominent; the long process and the membrana tympani retracted with light streak diminished, or wanting entirely; and later in the disease varying degrees of opacity of the membrane. The retraction of the drum in these cases is usually attributed to external atmospheric pressures, the Eustachian tube being occluded and the residual air absorbed. According to the author, there is a more important factor in the retraction of the drum, and that is the intra-tympanic muscles. The retraction of the drum which occurs during the first attack of naso-pharyngitis with its contingent hyperemia of the Eustachian tube causing its temporary occlusion, must resume its normal position as soon as the Eustachian tube again becomes patulous which occurs in a very few days. It is only after repeated attacks of "cold in the head" that the patient finally imagines that he cannot hear as well as formerly. The atmospheric pressure alone is not sufficient, or rather has not existed long enough to account for the drum's final retracted and sclerosed condition in these cases. The fact that the drum does not undergo these changes in its normal position is, more than likely, due to the early disorganization of the stapedius muscle which permits the uncontrolled action of the tensor tympani to hold the drum in this retracted position, until further inflammation and infiltration finally firmly fix it. The anatomical relation of the stapedius shows this to be possible. The fact that it completely fills the bony canal and is devoid of a sheath or connective tissue covering, is conducive to its early disorganization. Being in direct touch with the periosteum any inflammation of this canal would interfere with its nutrition and lead to its speedy destruction, this result being hastened by the pressure incident to the periostitis. After this has occurred the equilibrium between it and the tensor tympani is lost, the membrane is retracted, and the stapes pushed into the foramen ovale. The tensor tympani, though exposed to the same inflammatory process, is differently affected. Being covered with a sheath of connective tissue it is not so liable to suffer from the pressure. The inflammation

assumes the character of a cellulitis, and the vitality of the muscle escapes the deleterious influence to which the stapedius is subjected.

When disorganization of the stapedius has occurred Politzerization is not only beneficial, but contra-indicated, as any effective massage would only strengthen the offending muscle, and increase its action. In the latter stages, where the drum is retracted and sclerosed, with stiffened or ankylosed ossicles, Politzerization is too feeble for massage and is practically useless in ear affections, except for intra-tympanic injections, or as an aid in diagnosis. The author also condemns the use of the modern pneumophono instruments for the production of aural massage, and also the vibrometer which he regards as useless, only causing a disturbance of intra-labyrinthal fluids and interfering with normal sound conduction. The treatment suggested by him in the earlier stages is the one in vogue at present, intra-tympanic injections, and in the later stages in which we have sclerosis, ankylosis, etc., ossiculectomy, in his opinion, has a future.

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#### AURAL TUBERCULOSIS.

In the treatment of this affection Dr. S. F. Snow (*Buffalo Medical and Surgical Journal*, December, 1895,) recommends thorough cleansing and careful applications of a forty to eighty per cent lactic acid solution on a probe, and such constitutional remedies as are prescribed for the general tubercular condition that is usually present. He also extols the value of the Adirondack forests as a winter health resort, and points out that in that region we have a natural, all-the-year-round sanitarium for consumptives.

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#### PAINFUL DRESSING AFTER MASTOID OPERATION UNDER HYPNOTIC SUGGESTION.

Dr. F. C. Todd (*Journal of the Am. Med. Ass'n.*, January 4, 1896,) reports an interesting case demonstrating Moll's statement that disobedient people, when hypnotized, are often the easiest to manage. The patient, a girl, 10 years of age, had suffered from chronic middle ear suppuration for three years, complicated by a suppurating mastoiditis on either side which had been discharging through large ragged fistulæ. The child

was very fretful and impatient, and the family physician had been unable to exert any control over her. A mastoid operation was performed under chloroform, but at the first dressing two days later, extreme difficulty was experienced in keeping the patient sufficiently quiet to permit of the necessary manipulation owing to her violent struggling. The author, therefore, resorted to hypnotic suggestion with the result of rendering her perfectly obedient, and at the subsequent dressing, although she complained of considerable pain, it was not found necessary to repeat this procedure.

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#### CEREBRAL DISEASE FOLLOWING OTITIS MEDIA.

Dr. H. L. Swain (*Yale Medical Journal*, January, 1896,) records a case of suppurative otitis media in a man, 22 years of age, terminating in death from basilar meningitis. The remarkable features of this case are: That an examination on his first visit revealed only comparatively slight evidences; that the meningitis was unattended with marked facial paralysis and existed for a considerable time before its fatal termination; and finally the rare mode of invasion of the anterior of the skull through the cochlea and internal auditory meatus as disclosed at the autopsy.

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#### PNEUMATIC MASSAGE BY FINGER TIPS IN CATARRHAL DEAFNESS.

Dr. Randall (*Philadelphia Polyclinic, Omaha Clinic*, December, 1895,) states that for ten years he has been convinced of the value of this procedure in cases of catarrhal deafness. He teaches the patient to place the palmar surface of the finger (the middle finger is best) upon the tragus, reaching so far back that when the tragus is drawn strongly forward the finger can just be slipped into the meatus without having the nail scratch the back margin. Giving the finger only such play as does not lose the closure of the meatus, the patient can easily exercise decided alternations of pressure and suction, the latter especially.

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#### PREVENTABLE DEAFNESS AND ITS INFLUENCE ON SUCCESS.

In a paper on this subject Dr. J. G. H. Nichols (*Journal of the Am. Med. Ass'n.*, December 14, 1895,) discusses the

question whether the State, through a properly qualified medical officer of the school board, should not insist on the early detection of deafness and remedying of this, as well as other kinds of disease, as being an important factor in the after-success of the child, and consequently in its effect on the general welfare of the community. He recommends a scheme consisting of the following essential points:

1. The appointment in every school district, by the school board, of a properly qualified medical man whose duty it should be to attend on the registration days at school and examine all the children presenting themselves for the first time, as to their vision, hearing, condition of nose and throat, freedom from contagious disease and habits of cleanliness. He should make a record of the same in the school register, and should any disease be found, should notify the parents, on a proper blank, of its existence and the need of treatment.

2. During each school year he should examine every child in his district in the same manner and should keep a record of the same, and note if his recommendations have been complied with.

The medical examiner should supervise the heating, lighting and ventilation of the school rooms, and should have power to enforce his recommendations. He should, at stated intervals during the year, give instructions to the pupils, and by circular letter to the parents in regard to the care of the eye, ear, nose and throat, and general hygiene.

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#### THE TREATMENT OF ACUTE INFLAMMATION OF THE MIDDLE EAR AND MASTOID.

Dr. E. B. Dench (*American Medico-Surgical Bulletin*, November 15, 1895) read an interesting paper on this subject before the Mississippi Valley Association, from which the following practical points are abstracted: At the inception of acute middle-ear inflammation he recommends one to two ounces of blood should be withdrawn by the wet cup or by natural leeches—preferably the former. This affords temporary relief of pain and may abort the inflammatory process. Still further relief may be afforded by application of dry heat by means of a hot-water bag. No oleaginous material to be introduced into the meatus. Even irrigation with warm water is

contra-indicated in the early stages. A single full dose of morphin or of one of the preparations of opium administered at this time relieves pain, secures rest and renders the other measures more efficacious. This treatment is indicated only in the early stages, and if the pain returns no effort should be made to relieve it by the internal administration of drugs. If in acute catarrhal otitis the middle ear is gradually filled with sero-mucus, which forces the drum membrane outward and threatens the integrity of the septum, the tension should be relieved before the pressure is sufficient to cause rupture. If the inflammatory process has ceased, as evidenced by the absence of pain, and the tension is not excessive, we may hope to cause an absorption of the effusion by the use of the catheter, or, in children, by inflation with the Politzer bag, and thus effect a cure without surgical interference. It is never wise, however, to await spontaneous rupture, because such a perforation, being the result of local necrosis, is never repaired completely, and the thin cicatrix resulting may be the cause of impaired hearing in later years. On the other hand, if an incision be made there is no local necrosis and healing follows in a short time without formation of cicatricial tissue.

In acute inflammation of the tympanic vault surgical interference is demanded much more promptly. This form of middle-ear inflammation is essentially a cellulitis, since the infection is in the reduplications of mucous membrane with which the vault is lined. Owing to the intimate connection between the tympanic vault and the mastoid antrum, and to the virulence of the infection, it is never wise to postpone free incision until fluid be present. The object of such an incision is to relieve the tension in the engorged tissues and to prevent local necrosis. The procedure suggested by Blake, with slight modifications, is followed.

After incision in acute catarrhal or purulent inflammation, simple cleansing is all that is required to effect a cure. The external auditory meatus must be kept free from fluid, and especially from fluids which either are toxic themselves or may become so through aerial infection. For this purpose the author prefers irrigation of the meatus every two to four hours with half a pint of a warm solution of bichlorid of mercury of the strength of 1:5,000, the fluid to be injected with an ordinary hard rubber ear syringe. If the discharge is very

profuse a small pledget of cotton should be worn in the incisura intertragica. As the discharge diminishes in quantity, the frequency of irrigation is reduced, and when the edges of the incision have become adherent, if all evidences of inflammation have disappeared, a little boric acid is dusted over the walls of the canal and the surface of the membrane. While there is any appreciable amount of discharge no powders should be used. Instillation of astringent solutions is never necessary in cases seen before spontaneous rupture of the membrana has occurred, and seldom in cases of acute catarrhal otitis in which the drum membrane had ruptured spontaneously and which are seen before the vault of the tympanum has become involved secondarily. Ear drops, to be used by the patient at home are of little value, except as a means of securing an aseptic condition.

The author regards temperature as of but little importance in the diagnosis of cases where the inflammatory process threatens the mastoid, but has found that tenderness or pressure over the mastoid is an almost certain sign of mastoid involvement. Another sign of great importance is the sinking of the upper and posterior walls of the meatus, narrowing the deep canal and obscuring the upper and posterior part of the drum membrane. The first indication, if the mastoid is involved, is to secure the best possible drainage of the tympanic vault, through the external meatus, by an incision through the membrana flaccida, from the short process of the malleus backward to the tympanic ring, and from this point outward through the soft tissues covering the superior wall of the canal for a distance of one-quarter to one-half an inch. Rest in bed, restricted diet, irrigation of the canal with bichlorid solution every two to four hours, and local application of cold are indicated. The length of time during which cold applications should be continued in the hope of aborting the inflammation should not exceed forty-eight hours, and usually thirty-six hours are sufficient. If the local tenderness returns, or if it has failed to disappear after the employment of cold applications, in the manner above described, the mastoid should at once be thoroughly opened. Nothing is gained by using leeches or the wet cup behind the ear, or by the application of blisters to the mastoid, or by making the so-called "Wilde's incision." Such measures may temporarily check the process, or rather may mask the symptoms, while the destruction of the osseous tissue still goes on. The mastoid

operation, if properly conducted, is not attended with any risk to the patient, and if Wilde's incision seems indicated, the operator should go a step further and open the bony cells.

#### THE ETIOLOGY OF TINNITUS AURIUM.

After enumerating the various causes of tinnitus, Dr. S. O. Richey (*Journal of the Am. Med. Ass'n*, January 4, 1896) states that ankylosis of the ossicula auditus, especially of the foot-plate of the stapes in the foramen ovale, is an active factor in the etiology of tinnitus. Ankylosis of the other articulations, while difficult to relieve, does not offer the formidable embarrassment which attends ankylosis of the foot-plate of the stapes, because they can be reached through the Eustachian tube by means of vapor of iodine, and the joints rendered movable by this means and by the tapotement inseparable from inflation of the tympanum. The author believes that excision of the drum membrane with the incus and malleus does not reach the seat of the trouble. On the other hand, the results of stapedectomy were disappointing, owing to the fact that instead of detaching the stapes in its entirety, the crura were usually broken off, leaving the foot-plate still engaged. Even if the foot-plate had always been removed with entire relief, the improved condition could not last, unless such treatment were adopted as would stay the further progress of the cause, which has been shown by Politzer to be a "circumscribed primary affection of the labyrinthine capsule, exhibiting, post-mortem, in the region of the niche of the oval window, more or less sharp bony protuberances, covered mostly with normal mucosa, the neoplastic bony tissue gradually pushing aside the normal bone and attacking the oval window and stapes producing ankylosis of the stapes. The round window may also be very much contracted."

In conformity with Politzer's view that the hyperostosis is due to gout (inclusive of all causes of intra-cranial circulatory disturbances) Richey has employed with some success iodine vapor as a topical application in these cases together with the constitutional administration of the drug, diet baths and clothing.

#### STAPEDECTOMY AND MOBILIZATION OF THE STAPES FOR THE IMPROVEMENT OF THE HEARING IN DEAFNESS.

Dr. E. B. Gleason (*Atlantic Medical Weekly*, November 23, 1895) relates the case of a lady, 30 years of age, in which he

performed stapedectomy. Although before the operation he had determined that the stapes of her left ear was fixed almost immovably in the pelvis of the oval window, and that at least part of the labyrinth comprising the first turn of the cochlea was probably atrophied. The diagnosis was made in part by Rinné's method, and confirmed by a history of long continued middle-ear catarrh. Other tests made with Galton's whistle, tuning-forks and the piano demonstrated that her deafness was the result of disease of the labyrinth as well as that of the middle ear. By Gelle's test it was found that the stapes of the left ear, at least, was immovable, and that of her right ear (the better one) nearly so, by any pressure that could be brought to bear upon it by condensing the air in the auditory canal by means of Politzer's bag. An exploratory incision was made under ether narcosis, involving the larger part of the posterior circumference of the drum-head, and the flap was turned forward over the malleus handle. The incision was followed by little or no bleeding, and that portion of the intra-tympanic membrane that was visible was yellow, bloodless, and almost tendon-like in appearance. The incudo-stapedical articulation was nearly hidden behind the annulus tympanicus, and the stapedius tendon was cut in the hope of being able to draw the articulation forward into better view. The stapes was, however, almost immovable. The incudo-stapedial articulation was then severed and an attempt was again made to mobilize the stapes, considerable traction being made for this purpose, outward and forward. After the operation the patient suffered much from nausea and dizziness, which subsided in the course of a week. Six months later her hearing had improved to the extent that she was able to hear all the notes of her piano. While in this case a general anesthetic was considered necessary, the author believes that it is usually best to operate in catarrhal cases under cocain anesthesia, in order to be able to estimate, at each stage of the operation, the effect that has been produced upon the hearing, or the amount of relief that has been attained as regards tinnitus. One of the best results that he has obtained from an intra-tympanic operation on a catarrhal case was done under cocain anesthesia. After incision of the posterior periphery of the drum-head, the instillation of a few drops of a four per cent solution of cocain rendered subsequent procedures almost painless. The hearing was tested after the incision and

found not improved. The stapes was then moved by means of a cotton-tipped probe, a procedure that rendered the patient somewhat dizzy and faint, but produced no improvement in his hearing. As soon, however, as the incudo-stapedial articulation was severed, the hearing, which before the operation was very imperfect, became nearly normal and has remained nearly normal for speech for the past six months which have followed the operation.

## A CASE OF PONTILE LESION WITH OCULAR SYMPTOMS.

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OF recent years our knowledge of the anatomy and physiology of the pons and oblongatas has been increased to such an extent, that the localization of lesions in that portion of the nervous system has become almost as definite as it is in the cerebrum. Usually the condition of alternate hemiplegia is the most notable feature, that is, paralysis or paresis of the extremities on one side of the body, with consentaneous involvement of some of the cranial nerves on the other. Change in the sensation of the parts affected may or may not be a symptom, according as the lesion is situated in one part or another. The case about to be reported, is a very good illustration of a, to a great extent, typical case of pontile lesion; and the involvement of so many cranial nerves makes it an especially interesting study from the standpoint of localization.

Antonio L., male, cabinet maker, 35 years of age, native of Hungary, came to the clinic for nervous diseases of the Philadelphia Polyclinic, August, 1895, with the following history:

Family history is negative. The patient himself was always a healthy man and served in the Austrian army, during which service he contracted syphilis. Twelve years ago he was discharged from the army, and subsequently was confined to the hospital for six weeks, with an illness which caused swelling of the abdomen. He had no other sickness until March, 1895. On the first day of that month he attempted to rise from bed, and found himself unable to move the left arm or leg, or to speak plainly. This condition improved, so that in six weeks he walked about, using a cane for support, but he noticed that objects appeared double to him, and that it was necessary for him to twist his head to one side to see distinctly. He could open and close his eyelids without difficulty. The mouth was quite drawn to the left, and the right half of the lips seemed awkward in use. Hearing with the right ear was almost totally lost.

Present condition: The patient is a well-nourished, intelligent man, who does not complain of pain. His left arm and leg are quite paretic. Extension of the fingers of the left hand is almost impossible, and other movements of the left upper limb are performed with difficulty. Motion is almost completely lost in the left lower extremity. When walking is attempted the leg is partially lifted, then dragged along, not circumducted.

The right side of the face droops slightly, but the patient has fairly good control of all the facial muscles, save the orbicularis oris and the *lavatores labii*. Emotional control is well preserved; there are no "bursts of crying or laughing."

The external rectus muscle of the right eye is completely paralyzed. Movement of the right globe to the temporal side is impossible. There is no paralysis of consentaneous ocular movement of the left side, the muscles of that eye being unaffected. The head is inclined to the right, and an effort to look at objects causes a very great exaggeration of this position.

Tendon and muscle phenomena are increased on the paretic side. Electrical examination of the face gives degeneration reactions in the muscles about the mouth. Tactile, pain and thermic senses are normal everywhere on the body, excepting a portion of the right side of the head and face, where pain sense is abolished. Tactile and temperature senses in this area seem

to be unimpaired, or else affected to so slight a degree that the impairment can not be proven.

Almost complete deafness is the condition of the right ear. This, the patient claims, has been only since the "stroke." Hearing has been impaired to a slight extent on the left side for many years. Tested with a watch: Right ear, contact, hearing; left ear, 26 cm., hearing. Examination of the eyes gives no result other than the double vision already mentioned. Sense of smell appears to be preserved. Taste on the right side is completely lost, both anteriorly and posteriorly.

In a very recent article by Mills<sup>1</sup> the subject of the localization of the pontile lesions is very thoroughly discussed. In considering the anatomy of this portion of the nervous system he separates what is commonly called the pons varolii into two parts, and calls the ventral part the pons, in which are found chiefly fiber tracts and a few special nuclei. The dorsal part he denominates the preoblongata, and locates in it the nuclei of the cranial nerves, from the fourth to the twelfth. Caudad of these structures is the postoblongata, or, as it is better known, the medulla oblongata. By means of incisions, dorso-ventral and cephalo-caudal, he makes sections of the combined pons and preoblongata, which allow of very complete gross examination and subsequent preparation for the microscope.

Taking a dorso-ventral section from the caudal third of the pons (Fig. I) we find that it is made up principally of two sets of transverse fibers, the superficial and the deep, and the pyramidal tracts. The superficial transverse fibers are on the ventral surface, and are mostly cerebellar fasciculi connect which portions of opposite halves of the cerebellum, and also parts of the lateral lobes of the cerebellum with opposite cerebral hemispheres.<sup>2</sup>

Dorsad of these fibers lie the pyramidal tracts, the great motor path from the cerebral cortex. In them, fibers of the cranial nerves continue, and the fasciculi for the arm

<sup>1</sup> Mills, Chas. K. Localization of Lesions in the Pons and Preoblongata, *Internat. Clinics*, Fifth Series, Vol. III, p. 150.

<sup>2</sup> Mills. *Op. cit.*, p. 156.

and leg of the opposite side are found. The deep transverse fibers are still further dorsad, and are principally from the middle peduncle of the cerebellum. A large portion of them go to help form the trapezium or trapezoid body, in which structure lies the path of the cochlear branch of the auditory nerve.<sup>3</sup>

The fillet, which is the great sensory tract, the superior olive, the nuclei of the various cranial nerves, and other important structures, are all dorsad of those mentioned, in the pons and preoblongata.

In order to locate the lesion in the case under considera-

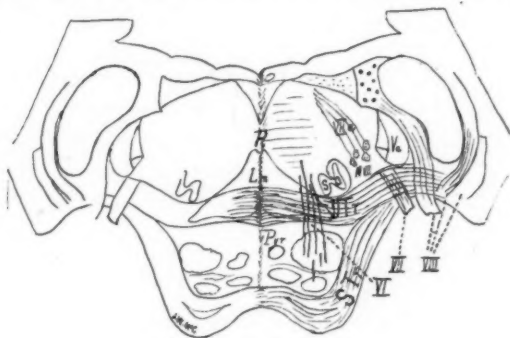


FIG. I.

Diagrammatic representation of a dorso-ventral section of the pons and preoblongata, showing the relations of the different nerve roots; DTr., deep transverse fibers;

Pyr., pyramidal tracts; STr., superficial transverse fibers; S. O., superior olive; Lm., lemniscus or fillet; R., raphe; Va., ascending root of fifth nerve; VI, VII, VIII, root fibers, etc., of the VI, VII, VIII, cranial nerves. (After Obersteiner).

tion, let us analyze the symptoms. We have a lesion involving the fifth, sixth, seventh and eighth cranial nerves of the right side, and the motor supply of the left arm and leg. Possible damage to the ninth nerve we will endeavor to eliminate. From the peculiar distribution of the paralysis, the so-called alternate or crossed hemiplegia, we believe that the seat of trouble is in the pons, and almost solely confined to the portion where the motor nerves are found.

<sup>3</sup> Obersteiner. H. *Anatomy of the Central Nervous Organs*, trans. by A. Hill, 1890, p. 225.

By taking each cranial nerve separately we may be able to point out the divisions, or tracts of the pons which are involved.

Figure II shows the area of anesthesia on the right side of the face. This corresponds very closely with the cutaneous distribution of the third division of the trig-

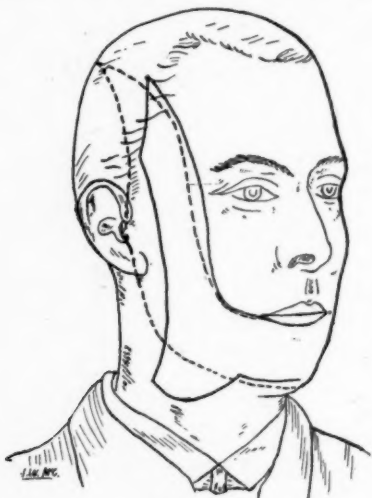


FIG. II.

*Area of anesthesia of the right side of the face. Broken line marks the normal distribution of the third branch of the fifth nerve. Solid line shows the anesthetic area in the case under consideration.*

minal nerve.<sup>4</sup> The muscles supplied by this nerve are not affected in any way, hence we can exclude the motor branches. The loss of taste sense on the right side suggests a subject for discussion. Wood<sup>5</sup> and others are inclined to the belief that the function of taste is subserved by both the fifth and ninth nerves. Herter<sup>6</sup> says that the anterior two-thirds of the tongue is supplied for taste by the fifth nerve, the posterior one-third, and the palate, he thinks,

<sup>4</sup> Heiberg, Jacob. *Atlas of the Cutaneous Nerve Supply of the Human Body*, trans. by W. W. Wagstaffe, 1885.

<sup>5</sup> Wood, H. C. *Nervous Diseases and their Diagnosis*, 1892, p. 335.

<sup>6</sup> Herter, C. A. *Text-Book of Nervous Diseases by American Authors*, edited by F. A. Dercum, 1895, p. 805.

derive taste fibers from the glosso-pharyngeal nerve, but the impressions are carried to the fifth nerve by connecting branches before reaching the root fibers of the ninth nerve. Ferguson<sup>7</sup> suggests that while the fifth and the ninth nerves carry nerve fibers of taste to the tongue and palate, their office as nerves of taste is doubtful, as they may carry fibers from the other nerves. Herter<sup>8</sup> speaks of recorded cases of loss of taste on one side of the tongue where the fifth nerve alone was involved in disease. Gowers<sup>9</sup> claims that taste has been abolished by a lesion affecting the root of the fifth nerve. Erb<sup>10</sup> corroborates this view.

Gowers<sup>11</sup> also refers to a case of disease of the trigeminal nerve in which the muscles of mastication were paralyzed, and the sense of taste was lost on the whole of the same side as the disease. There was no change in the cutaneous sensibility, hence he concludes that the paths for common sensation and taste are separate and distinct, with the latter closely associated with the motor path.

Recent researches by Reid, of Edinburgh, and others show that the muscles of the palate derive their motor supply from the spinal accessory nerve. This would give the palatine branches of the spheno-palatine ganglion the function of sensory nerves, perhaps, as taste nerves for the parts supplied by them.

In the case here reported, the complete loss of the sense of taste on the right side seems to be due to a lesion affecting the taste-path of the trigeminal nerve. The anesthetic area on the face proves that the nerve is involved to a certain extent. The absence of paralysis of the muscles supplied by the glosso-pharyngeal nerve gives a valid objection to the idea that this nerve is damaged in any part of its course. We may, therefore, reasonably suppose, that in

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<sup>7</sup> Ferguson. *Medical News*, London, October 18, 1890.

<sup>8</sup> Herter, C. A. *The Diagnosis of Diseases of the Nervous System*, 1892, p. 52.

<sup>9</sup> Gowers, W. R. *Journal of Physiology*, 1881, Vol. III, p. 229.

<sup>10</sup> Erb, Wilhelm. *Neurolog. Centralb.*, 1882, p. 77 and 149.

<sup>11</sup> Gowers, W. H. *Manual of Diseases of the Nervous System*, second edition, Vol. II, 1893, p. 226.

our case the taste-path of the fifth nerve is wholly destroyed, and the path for common sensation partially damaged.

The paralysis of the external rectus muscle of the eye, as present in this case, is generally regarded as rare. deSchweinitz<sup>12</sup> thinks that pure cases of it are uncommon, and that it must undoubtedly be a fascicular paralysis. Gowers<sup>13</sup> holds, that if in the case of a lesion of the pons the fibers of the sixth nerve are damaged away from its nucleus, the paralysis is of the external rectus muscle alone, and no deficiency of the internal rectus of the opposite side is observable. (Fig. III.)



FIG. III.

*Case of pontile lesion. Paralysis of right external rectus muscle. Attempt of the patient to look far to the right.*

If, in the present case, the paralysis was due to a lesion of the sixth nerve nucleus, we should find conjugate deviation, for fibers passing from this nucleus to the nucleus of

<sup>12</sup> deSchweinitz, G. E. *Text-Book of Nervous Diseases by American Authors*, edited by F. X. Dercum, 1895, p. 789.

<sup>13</sup> Gowers, W. R. *Op. cit.*, p. 188.

the third nerve have been positively demonstrated by Bruce,<sup>14</sup> Ferrier,<sup>15</sup> Obersteiner<sup>16</sup> and others. In nuclear lesion also, we would likely find symptoms of involvement of other muscles of the right eye.

On account of the connection between the facial nucleus and that of the hypoglossal nerve, nuclear disease of the seventh nerve would cause paralysis of the transverse fibers of the tongue, thus giving deviation of the tongue to one side. Such a condition, however, is not present in this case, and the reactions of degeneration in the muscles, together with the marked improvement in the paralysis as originally observed, only strengthens the supposition that the disease in this case is beyond the nucleus, that is, in the root fibers of the seventh nerve.

The association of an auditory nerve condition with that of the other cranial nerves, certainly adds to the interest of our case. Most writers regard such a thing as either very rare or never occurring. Mills,<sup>17</sup> however, refers to it as a possible symptom. Herter<sup>18</sup> claims, that when deafness of sudden onset is found in conjunction with hemiplegia of the opposite side, the lesion most probably involves the nucleus of the eighth nerve. Considering, for a moment, the anatomy of the eighth nerve, we find that it has two roots known as the superficial or cochlear, and the deep or vestibular. Of these, the former is regarded as the true nerve of hearing;<sup>19</sup> the latter subserving the function of equilibration. The path of the cochlear nerve, in part at least, lies, as we have already mentioned, in the trapezium or trapezoid body which is made up principally of the deep transverse fibers of the pons.

The nuclei of the nerve (auditory) have indirect connection with the nuclei of other cranial nerves by way of the

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<sup>14</sup> Bruce, Alex. *Illustrations of the Nerve Tracts in the Mid and Hind Brains*, 1893.

<sup>15</sup> Ferrier, David. *Functions of the Brain*, second edition, p. 23.

<sup>16</sup> Obersteiner, H. *Op. cit.*, p. 292.

<sup>17</sup> Mills. *Op. cit.*, p. 155.

<sup>18</sup> Herter, C. A. *Diagnosis of Diseases of the Nervous System*, p. 161.

<sup>19</sup> Obersteiner, H. *Op. cit.*, p. 303.

superior olive,<sup>20</sup> which connection, gives a key to the phenomena of associated movements of the eyes and head.<sup>21</sup> There is no impairment of equilibrium, and no paralysis of associated movements, both of which would likely be found in nuclear disease, so that here again we must conclude on involvement of the root fibers rather than nucleus, only one root, however, being affected.

Returning to the anatomy of the pons and preoblongata, we find that the root fibers of the various nerves pursue complex and devious courses through those structures, twisting about themselves or other root fibers or nuclei, until finally they reach the point of exit. Motor fibers pass to the pyramidal tracts, therefore, a lesion in the pons causing motor paralysis or paresis will most likely be found involving this subdivision. The fifth nerve passes through the deep transverse fibers of the pons with the sensory portion most mesad. Through the deep transverse fibers also passes the cochlear branch of the auditory nerve.

The nourishing vessels of the pons are the medial, which go directly to the nuclei, and the radicular, which pass along the nerve roots and divide into two branches, one to continue with the nerves, the other to aid the medial in nourishing the nuclei. From the history of our case we suppose that the lesion was a hemorrhage, probably from one or many of the radicular arteries. The damage was limited to one side by the raphé, and extended in a lateral direction, being confined to the pyramidal tracts, and a portion of the deep transverse fibers by the walls formed by the latter and the superficial transverse fibers.

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<sup>20</sup> Gowers. *Op. cit.*, p. 187.

<sup>21</sup> Bennett, J. Hughes and Savill, Thos. *Brain*, July, 1889, Vol. XII.

# ABSTRACTS FROM CURRENT NEUROLOGICAL LITERATURE.

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OCULIST AND AURIST TO THE CHILDREN'S HOME—LATE JUNIOR RESIDENT  
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ERLY CLINICAL ASSISTANT WILLS EYE HOSPITAL; ALSO TO  
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## BRAIN TUMOR WITH OCULAR SYMPTOMS--AUTOPSY.

Fisher and Erdmann report the case of a woman with symptoms of cranial tumor. Late in 1890 she had influenza followed by long continued excruciating headache. In the spring of 1893 she had flashes of light before the eyes, more marked on the right side. By August, 1893, vision in right eye had sunk to light perception only. Vision in other eye continued good. By May, 1894, patient became entirely blind. She had also lost the sense of smell and had become deaf in the right ear. Ophthalmoscopic examination showed high neuro-retinitis in each eye.

Despite the fact that the head pain had, from the first, been sharpest over the right brow, that the right optic nerve had been first involved, that the sense of smell was first impaired on the right side, all pointing to a neoplasm under the right frontal lobe, the autopsy revealed a glioma in the right cerebellar hemisphere pressing on the pons, and including, but not destroying the cranial nerves.

This case, therefore, shows of how little value for localization the situation of cephalalgia (sometimes) is where the

growth is deeply situated and slow in its development; and it also demonstrates how tolerant the cerebral structures are when injury to them is gradual. (*Journal Nerv. and Ment. Dis.*, September, 1895.)

#### A CASE OF INJURY TO THE LEFT ANGULAR GYRUS.

The following case history from the pen of Dr. Eugene Riggs is in direct contra-evidence to the theory of Henschen, who believes the visual cortical center to be located in the cuneus, and especially in the cells distributed about the calcarin fissure.

*History:* T. R., a guard at the Minnesota State Penitentiary, was struck two blows upon the head with a machinist's hammer in the hands of an insane convict. He lost consciousness for a few seconds only, and came soon after to the hospital department. Examination discovered a depressed fracture an inch in length and one-eighth of an inch in depth in the left occipital region. No shock or symptoms of brain injury. Case was treated expectantly and recovery seemed uninterrupted. Four weeks after the injury he returned to work, but soon developed much headache and a sense of confusion while on duty in the shop, so much so, that eight weeks after the injury he was finally obliged to go home. He was able to go about and walked nearly a mile to consult the doctor every second or third day. Ten weeks after the injury he began to complain about his vision. It was at this time that Dr. Riggs first saw the case. He reports the visual fields and light response of both pupils to have been normal. Vision in right eye perfect. Vision in the left eye (corresponding to the side on which the head was injured) was very defective.

At four feet he could see the outlines of persons, but could not distinguish one from another. At four inches he could read good-sized print. Careful examination excluded hysteria as a cause.

Ten days later, operation. The dura was found discolored beneath the depression. As soon as the patient regained consciousness he could count fingers seven feet away with the affected eye.

Five hours after the operation the patient died suddenly. The necropsy showed injection of the dura and pia generally:

softening of the greater portion of the angular gyrus and the supra-marginal convolution. The occipital lobe was carefully examined by Drs. Crafts and Riggs and "no lesion was present there." "This case seems noteworthy for the following reasons:

"1. Because of the absolute demonstration it gives that the right angular gyrus was the cause of the dimness of sight which was so remarkably improved after the operation.

"2. Because of the fact that the visual disturbance was homonymous instead of being crossed amblyopia which is, according to Gowers, the only recorded visual symptom resulting from lesion of the angular gyrus.

[With the two statements just quoted the reviewer cannot entirely agree. Authorities are sadly divided as to the seat of the visual center. Henschen, whose work has already become a classic, takes positive ground. After a consideration of his own cases, and a careful analysis of all cases of injury to the angular gyrus which have been sufficiently well observed and reported, he comes very decidedly to the conclusion that in such injuries the lesions struck so deeply into the medullary substance as to implicate the optic radiations.

As to the second of the author's conclusions there is much to be said: Was the left eye examined ophthalmoscopically? Was the condition of the globe, the nerve, the chiasm and the tract carefully investigated at the autopsy? Was there a microscopic section made of the left optic nerve to prove or disprove its integrity? These are pertinent questions and until they have been answered we can only say that the evidence is not all in, and we cannot, therefore, accept Dr. Riggs' conclusions as final. W. R.] (*Journal Nerv. and Ment. Dis.*, September, 1895.)

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#### VERTIGO AND THE OCULAR MUSCLES.

Joseph Collins (*Journal of Nerv. and Ment. Dis.*, September, 1895) justly observes that one of the most valuable contributions to our knowledge of the puzzling symptom known as vertigo has recently come from the pen of Mendel, of Berlin. Mendel says that vertigo is almost invariably ushered in by ocular phenomena. In some cases the patient has the sensation of seeing the surrounding objects whirling around himself, and

experiences a tendency to fall either in the same direction as the objects seemingly turn, or toward the other side; at other times, it seems to the patient as if the objects about him were approaching or receding, rising or falling.

There are four degrees of vertigo.

In the first and slightest form only ocular symptoms occur; in the second, there is a sensation of disturbed equilibrium; in the third, the equilibrium is really upset and the patient falls; in the fourth, these symptoms are accompanied by the above-mentioned secondary phenomena. The pathognomonic clinic sign of vertigo is disturbance of the equilibrium. Maintenance of the equilibrium is intimately connected with the sense of touch and sight. Whether hearing has anything to do with it is still a subject of controversy.

True vertigo is always associated with a disturbance in the musculature of the eyes. Vertigo is the first symptom complained of by patients who suffer from paralysis of the ocular muscles, whether this paralysis be nuclear or peripheral.

On the investigation of the causes of ocular vertigo with special reference to the supply of blood to the muscles of the eye, I have found that the nuclei which preside over the movements of the ocular muscles receive their branches from the posterior cerebral artery through fine terminal branches, not anastomosing with each other. The result of this arrangement is that the slightest disturbance in the central circulation immediately detracts from the supply of blood to the nuclei of the ocular muscles. Every pathologic process which develops a focus of disease in the brain will necessarily influence the cerebral circulation, and in consequence thereof be associated with vertigo, especially when this focus occupies a cerebral fossa.

In recapitulation, he says vertigo consists in a group of symptoms determined by a disturbance in the sense of equilibrium due to defective function of the ocular muscles. This latter defect may be peripheral or cerebral in origin.

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#### THE RELATION OF THE CEREBRUM AND CEREBELLUM TO EYE MOVEMENTS.

Dr. Risien Russell believes it is possible to demonstrate, even in the dog and cat, the existence of distinct foci in the cerebral cortex, standing in relation to each simple movement of the

eyes. In the presence of normally balanced external ocular muscles, the constant result of stimulation of the anterior eye area was the movement of both eyes to the opposite side. Excluding this movement by dividing the external rectus of the opposite eye and the internal rectus of the eye on the side of the hemisphere that is stimulated, one is enabled to show the existence of a focus presiding over simple upward movement of the eyes. By then dividing the levators of the eye, a focus is determined which is related to simple downward movement. He believes that the true action of these centers in the cortex must be to initiate movement by their action on lower centers.

COMMENTARY BY PROF. B. FRÄNKEL OF  
BERLIN, ON THE ANATOMICAL  
NOMENCLATURE.

TRANSLATED BY A. C. BERNAYS, M. D.,  
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FROM THE ARCHIV FÜR LARYNGOLOGIE UND RHINOLOGIE,  
Vol. III, No. 1.

Since the year 1887 the Anatomical Association has been busy with the regulation and systematization of anatomical nomenclature. A commission has been appointed by the society for this purpose composed of the following members: Kölliker, O. Hertwig, His, Kollman, Merkel, Schwalbe, Toldt, Waldeyer, K. von Bardeleben, Braune, Henke, von Kupffer, von Mihalkovics, Rüdinger, Zuckerkandl, Kölliker being president, and W. Krause editor for the commission. Finally, a committee consisting of His, Krause and Waldeyer were entrusted with the duty of giving the entire work a uniform character. The Anatomical Association thereupon, at its meeting in Basel, resolved to adopt this nomenclature in the current year. The work had been done with the greatest diligence and the most admirable exactitude. In a supplementary volume of the anatomical department of the *Archiv. f. Anatomie und Physiologie*, a ratified "Anatomische Nomenclatur or Nomina Anatomica" is now before us, being the list of the names chosen by the commission of the Anatom-

ical Society, together with an introduction and explanation by W. His. The names are in one language, namely, Latin. It is taken for granted that this nomenclature having been accepted by the German Anatomical Society will become the rule in all European countries. America may, perhaps, take its own course. Considering the enormous importance of this matter, I give in the following list those parts which concern our specialty.

FACIES.	Processus maxillaris
NASUS.	Processus ethmoidalis
Dorsum nasi	OS LACRIMALE.
Apex nasi	Crista lacrimalis posterior
Ala nasi	COLLUM.
os.	Cervix
Sulcus nasolabialis	Larynx
Philtrum	Prominentia laryngea
Labium superius	Pharynx
Labium inferius	Trachea
Rima oris	Oesophagus
Cavum oris	OSSA FACIEI.
Lingua	OS ETHMOIDALE.
Fauces	Lamina cribrosa
Bucca (Mala) <sup>1</sup>	Crista galli
Sulcus mentolabialis	Processus alaris
Mentum	Lamina perpendicularis
Labyrinthus (ossis ethmoidalis)	Sulcus lacrimalis
Cellulae ethmoidales	Hamulus lacrimalis
Infundibulum ethmoidale	Fossa sacci lacrimalis
Bulla ethmoidalis	OS NASALE.
Lamina papyracea	Foramina nasalia
Foramina ethmoidalia	Sulcus ethmoidalis
(Concha suprema)	VOMER.
Concha superior	Ala vomeris
Concha media	MAXILLA.
Processus uncinatus	Corpus maxillae
CONCHA INFERIOR.	
Processus lacrimalis	

<sup>1</sup> Parentheses ( ) signify varieties; brackets [ ] additional names, explanatory names, double names and personal names; *italics* are auto-genetic expressions.

**Facies anterior****Facies nasalis****Facies orbitalis****Facies pterygoidea****Sinus maxillaris****Margo infraorbitalis****Canalis sive sulcus infraorbitalis****Foramen infraorbitale****Sutura infraorbitalis****Fossa canina****(Fossa praenasalis)****Incisura nasalis****Tuber maxillare****Foramina alveolaria****Canales alveolares****Planum orbitale****Margo lacrimalis****Sulcus lacrimalis****Canalis lacrimalis****Crista conchalis****Processus frontalis****Crista lacrimalis anterior****Crista ethmoidalis****Processus zygomaticus****Processus palatinus****Crista nasalis****Spina nasalis anterior*****Os incisivum*****Canalis incisivus****Sutura incisiva****Spinae palatinae****Sulci palatini****Processus alveolaris****Limbus alveolaris****Alveoli****Septa interalveolaria****Juga alveolaria****Hiatus maxillaris****Foramen incisivum****OS PALATINUM.****Pars Perpendicularis****Facies nasalis****Facies maxillaris****Incisura sphenopalatina****Sulcus pterygopalatinus****Processus pyramidalis****Foramen palatinum majus****Foramina palatina minora****Canales palatini****Crista conchalis****Crista ethmoidalis****Processus orbitalis****Processus sphenoidalis****Pars horizontalis****Facies nasalis****Facies palatina****Spina nasalis posterior****Crista nasalis****MANDIBULA.****Corpus mandibulae****Protuberantia mentalis****Tuberculum mentale****Spina mentalis****Foramen mentale****Linea obliqua****Fossa digastrica****Linea mylohyoidea****Sulcus mylohyoideus****Juga alveolaria****Ramus mandibulae****Angulus mandibulae****(Tuberositas masseterica)****(Tuberositas pterygoidea)****Incisura mandibulae****Processus condyloideus****Capitulum [proc. condyl.] mandibulae****Collum [proc. condyloidei] mandibulae**

Fovea pterygoidea proc. condyl-  
oidei

Processus coronoideus

Foramen mandibulare

Lingula mandibulae

Canalis mandibulae

Fovea sublingualis

(Fovea submaxillaris)

Pars alveolaris

Limbus alveolaris

Alveoli

Septa interalveolaria

#### OS HYOIDEUM.

Basis oss. hyoidei

Cornu minus

Cornu majus

#### CRANIUM.

Fossa pterygopalatina

Canalis pterygopalatinus

Foramen sphenopalatinum

Apertura piriformis

Cavum nasi

Septum nasi osseum

Meatus nasi communis

Meatus nasi superior

Meatus nasi medius

Meatus nasi inferior

Meatus nasopharyngeus

Choanae

Recessus sphenothmoidalis

Foramen jugulare

Fissura sphenopetrosa

Foramen lacerum

Palatum durum

(Torus palatinus)

Orbita

Aditus orbitae

Margo supraorbitalis

Margo infraorbitalis

Paries superior

Paries inferior

Paries lateralis

Paries medialis

Fissura orbitalis superior

Fissura orbitalis inferior

#### MYOLOGIA.

##### MUSCULI OSS. HYOIDEI.

M. digastricus

Venter anterior

Venter posterior

M. stylohyoideus

M. mylohyoideus

M. geniohyoideus

##### MUSCULI COLLI.

M. sternocleidomastoideus

M. sternohyoideus

M. omohyoideus

Venter superior

Venter inferior

M. Sternothyreoideus

M. thyreochoideus

(M. levator glandulae thyreo-  
oideae)

Fascia colli

Fascia praevertebralis

#### SPLANCHNOLOGIA.

Tunica albuginea

Tunica fibrosa

Tunica adventitia

Membrana mucosa

Tunica propria mucosae

[Lamina] muscularis mu-  
cosae

Tela submucosa

Plica villosa

Mucus

Tunica muscularis

Tunica serosa

Tela subserosa

Plica serosa

Ligamentum serosum

Serum

Bursa mucosa  
 Epithelium  
 Endothelium  
 Organon parenchymatosum  
   Parenchyma  
   Stroma  
 Glandula  
 Lobus  
 Lobulus  
 Glandula mucosa  
 Musculus viscerum

## FAUCES.

Isthmus faucium  
 Velum palatinum  
 Uvula [palatina]  
 Arcus palatini  
   Arcus glossopalatinus  
   Arcus pharyngopalatinus  
 Plica salpingopalatina  
 Tonsilla palatina  
   Fossulae tonsillares  
 Sinus tonsillaris  
 Plica triangularis  
 Fossa supratonsillaris  
 MUSCULI PALATI ET FAUCIUM.  
 M. levator veli palatini  
 M. tensor veli palatini  
 M. uvulae  
 M. glossopalatinus  
 M. pharyngopalatinus

## PHARYNX.

Cavum pharyngis  
 Fornix pharyngis  
 Pars nasalis  
 Pars laryngea  
 Ostium pharyngeum tubae  
   Labium anterius  
   Labium posterius  
   Torus tubarius  
 Plica salpingopharyngea  
 Recessus pharyngeus (Bursa

pharyngea) [Rosenmuelleri]  
 Recessus piriformis  
 M. stylopharyngeus  
 Fascia pharyngobasilaris  
 Tunica mucosa  
   Gl. pharyngeae  
   Tonsilla pharyngea  
   Fossulae tonsillares  
 Tela submucosa  
 Tunica muscularis pharyngis  
 Raphe pharyngis  
 Raphe pterygomandibularis  
 M. constrictor pharyngis superior

  M. pterygopharyngeus  
   M. buccopharyngeus  
   M. mylopharyngeus  
   M. glossopharyngeus  
   M. salpingopharyngeus  
 M. constrictor pharyngis medius  
   M. chondropharyngeus  
   M. ceratopharyngeus  
 M. constrictor pharyngis inferior  
   M. thyreopharyngeus  
   M. cricopharyngeus

## ORGANA RESPIRATORIA.

## CAVUM NASI.

Nares  
 Choanae  
 Septum nasi  
   Septum cartilagineum  
   Septum membranaceum  
 Vestibulum nasi  
 Limen nasi  
 Sulcus olfactorius  
 (Concha suprema) [Santorini]  
 Concha media  
 Concha superior  
 Concha inferior  
 Membrana mucosa nasi

Plexus cavernosi concharum	Organon vomeronasale [Jacobsoni]
Agger nasi	
Recessus spheno ethmoidalis	Cartilago vomeronasalis [Jacobsoni]
Meatus nasi	(Ductus incisivus)
Meatus nasi superior	
Meatus nasi medius	LARYNX.
Atrium meatus medii	Prominentia laryngea
Meatus nasi inferior	Cartilagine laryngis
Meatus nasi communis	Cartilago thyreoidea
Meatus nasopharyngeus	Lamina [dextra et sinistra]
Regio respiratoria	Incisura thyreoidea superior
Regio olfactoria	Incisura thyreoidea inferior
Gl. olfactoriae	Tuberculum thyroideum superius
Sinus paranasales	Tuberculum thyroideum inferius
Sinus maxillaria [Highmori]	(Linea obliqua)
Sinus sphenoidales	Cornu superius
Sinus frontales	(Foramen thyroideum)
Cellulae ethmoidales	Lig. hyothyroideum laterale
Bulla ethmoidalis	Cartilago triticea
Infundibulum ethmoidale	Lig. hyothyroideum medium
Gl. nasales	Membrana hyothyroidea
NASUS EXTERNUS.	Cartilago cricoidea
Basis nasi	Arcus [Cartilaginis cricoideae]
Radix nasi	Lamina [Cartilaginis cricoideae]
Dorsum nasi	Facies articularis arytaenoidea
Margo nasi	Facies articularis threoidea
Apex nasi	Articulatio cricothyroidea
Ala nasi	Capsula articularis cricothyroidea
Septum mobile nasi	Ligg. ceratocricoidea lateralia
Cartilagine nasi	Lig. ceratocricoideum anterius
Cartilago septi nasi	Ligg. ceratocricoidea posteriora
Processus sphenoidalis septi cartilaginei	Lig. cricothyroideum [medium]
Cartilago nasi lateralis	Lig. cricotracheale
Cartilago alaris major	Cartilago arytaenoidea
Crus mediale	
Crus laterale	
Cartilagine alares minores	
Cartilagine sesamoideae nasi	

Facies articularis	(M. ceratocricoides)
Basis [cartilaginis arytae- noideae]	M. cricoarytaenoideus lateralis
Crista arcuata	M. ventricularis
Colliculus	M. vocalis
Fovea oblonga	M. thyreoepiglotticus
Fovea triangularis	M. thyreoarytaenoideus [exter- nus]
Apex [cartilaginis arytae- noideae]	M. arytaenoideus obliquus
Processus vocalis	M. arytaenoideus transversus
Processus muscularis	CAVUM LARYNGIS.
Cartilago corniculata [Santorini]	Vallecula epiglottica
Synchondrosis arycorniculata	Aditus laryngis
Articulatio cricoarytaenoidea	Vestibulum laryngis
Lig. cricopharyngeum	Rima vestibuli
Lig. corniculopharyngeum	Labium vocale
Lig. ventriculare	Glottis
Lig. vocale	Rima glottidis
(Cartilago sesamoidea)	Pars intermembranacea
Lig. cricoarytaenoideum capsu- lare	Pars intercartilaginea
Lig. cricoarytaenoideum poste- rius	Ventriculus laryngis [Mor- gagnii]
Epiglottis	Appendix ventriculi laryn- gis
Petiolus epiglottidis	Tunica mucosa laryngis
Tuberculum epiglotticum	Membrana elastica laryngis
Cartilago epiglottica	Conus elasticus
Lig. thyreoepiglotticum	Plica glossoepiglottica mediana
Lig. hyoepiglotticum	Plica glossoepiglottica lateralis
Cartilago cuneiformis [Wris- bergi]	Plica aryepiglottica
Tuberculum cuneiform [Wris- bergi]	Plica nervi laryngei
Tuberculum corniculatum [San- torini]	Plica ventricularis
MUSCULI LARYNGIS.	Plica vocalis
M. aryepiglotticus	Macula flava
M. cricothyreoideus	Aditus glottidis inferior
Pars recta	Aditus glottidis superior
Pars obliqua	Incisura interarytaenoidea
M. cricoarytaenoideus posterior	Gl. laryngeae
	Gl. laryngeae anteriores
	Gl. laryngeae mediae
	Gl. laryngeae posteriores
	Noduli lymphatica laryngei

I must confine myself to a simple reproduction of the above names. It is understood, of course, that in other parts of the work, for instance, in the department of Neurology or Angiology, matters of importance for us occur. I now quote from the "*Illustration of the Nomenclature*" the pertinent remarks verbatim.

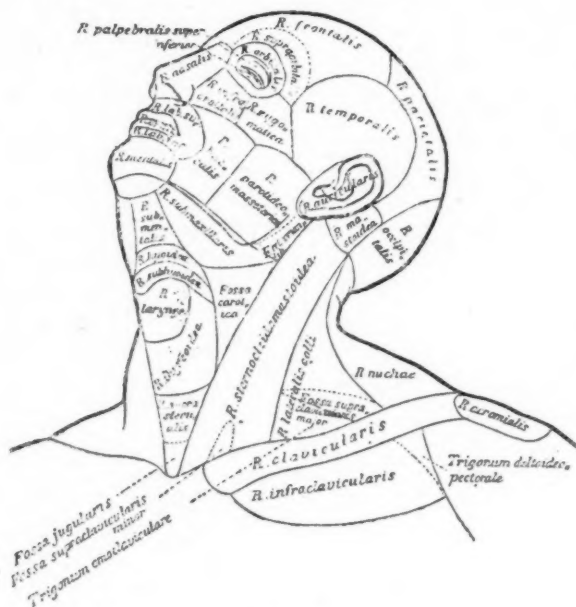


FIG. 1.

### SPLANCHNOLOGY.

Under the name of *Tonsilla Lingualis*, on recommendation of Professor Waldeyer, all the folliculli at the base of the tongue are included.

“Sulcus terminalis, (*ductus lingualis*), ductus thyroglossus, *sinus tonsillaris*, *plica triangularis*, *fossa supra-tonsillaris*. In considering these structures His refers to his *Anatomy of Human Embryos* (Vol. III, Leipzig, 1895). The body of the tongue and the root of the tongue are developed from two originally separated parts. The

body is developed from the median elevation arising from the floor of the oral cavity (the *tuberculum impar*); the root of the tongue being developed from the two sides of the inner surface of the second and third pharyngeal arches. At the boundary of the two original organs a groove which is bent into the form of an angle is usually prominent during life, and is called the *sulcus terminalis linguae*. The posterior part of the groove ends in the foramen caecum, the anterior in front of the *arcus palatoglossus*. The line of the *papillae vallatae* lies from 5 to 8 mm. in front of the *sulcus terminalis* within the territory of the body of the tongue itself. Beginning at the foramen a duct  $\frac{1}{2}$  to 1 cm. in length, and over, reaches downwards in the direction of the hyoid bone, called the *ductus lingualis*. This duct is a remnant of the embryonal *thyreoglossus* duct which, at the end of the first month, extends from the pharynx to the middle anlage of the thyroid body.

“The *arcus glossopalatinus* which is developed from two pharyngeal arches ends in a sharply pointed triangular fold of mucous membrane, called the *plica triangularis*. This fold is very narrow at the top but gradually becomes broader at its insertion in the tongue. Behind it, and to one side, we find a deep sinus in the fetus, called the *sinus tonsillaris*. From its base the entire tonsil is developed. According to the degree and extent of the adenoid growth the following possibilities may occur:

“1. The tonsil grows as a well-defined tuberosity within the sinus, and above it we find a very extensive *fossa supratonsillaris*.

“2. The tonsil almost completely fills the sinus up, but the *supratonsillaris fossa* may still be open. The *plica triangularis* lies upon the under portion of the tonsil and coalesces with it without, however, losing its sharp definition.

“3. Lymph follicles are developed on the free surface of the *plica triangularis*, and in extreme cases the boundary line between these follicles and the recesses of the tonsils is lost.

“*Recessus pharyngeus* [Rosenmuelleri]. Merkel divides the recessus infundibuliformis [Rosenmuelleri] following Tourtual in his work on topographical anatomy (Vol. IV, page 416) from the lateral sulcus of the pharynx which he, after Tourtual, calls *sinus faucium lateralis*. The commission has refused to adopt the latter nomination. Its location behind the cartilaginous Eustachian tube is characteristic for Rosenmuelleri's recessus, whilst the sinus lateralis of Tourtual-Merkel lies further down behind the plica salpingopharyngea.

“In regard to the *bursa pharyngea* I refer to the description of Merkel (loc. cit., p. 413). In my opinion, the bursa pharyngea must be classified with those relief formations on the posterior pharyngeal wall which are produced by the Mm. recti capitis anteriores. In making a dissection of the unopened pharynx from behind we find three fold-like projections near its insertion at the base of the skull. The two lateral folds are the two Rosenmueller's pockets seen from without. Lying in the median plane, attached to the tuberculum pharyngeum of the occipital bone, there is a fold which seems to be pushed between the two insertions of the muscles, and corresponding to it, before the pharyngeal tonsil is largely developed, we find a median groove running down the dorsal sides of the pharyngeal wall. The pharyngeal tonsil, like the lingual tonsil in its early development, is formed by a system of folds and furrows which converge in a downward direction. The middle one of these folds leads to the bursa pharyngea, and thus Merkel interpreted the bursa as a median tonsillar cleft.

“*Nasus*. Those names which have been enumerated above, in excess of the demands of existing text-books, are taken largely from G. Schwalbe<sup>2</sup> and from H. Meyer. *Limen nasi* is the boundary line between the vestibulum of the nose surrounded by the cartilages, and the nasal cavity proper. Above the limen lies the *atrium meatus medii* (the carina of Merkel) into which the agger nasi, rudiment

<sup>2</sup> *Anatomic der Sinnesorgane*, Leipzig, 1887.

of the anterior turbinated, extends from above. *Sulcus olfactorius* is the narrow cleft which leads upwards from the atrium between the agger nasi and the roof of the nasal cavity, and which extends towards the lamina cribrosa in the direction of the anterior part of the olfactory region. The *recessus spheno-ethmoidalis* is a gutter or sulcus which lies within the territory of the superior turbinated, and is, sometimes, covered by the concha suprema. *Meatus nasopharyngeus* is that part of the nasal cavity which opens into the pharynx under the body of the sphenoid bone. *Meatus nasi communis* is that vertical cleft which extends to the summit of the nasal cavity next to the septum. *Processus sphenoidalis septi cartilaginei* (Kölliker) is a broad, tongue-shaped portion of the septal cartilage from 4 to 6 mm. in breadth which follows the lower margin of the lamina perpendicularis of the ethmoid, and is more or less thoroughly enclosed by the two marginal plates of the vomer.

“*Larynx*. In an article on ‘Anatomy of the Vocal Cords’ by Dr. B. Fränkel,<sup>3</sup> the historical development and changes of the names of those parts referring to the rima glottidis and the vocal cords is explained. The name *glottis* was coined by Galen, and it was applied by him to a bodily formation which he compares to the vibrating tongues of a musical instrument. Vesalius and Fabricius ab Aquapendente used the same name to designate the rima glottidis or the lips of the glottis, namely, the vocal cords. The final naturalization of the word *glottis* meaning, thereby, rima glottidis, and *ligamenta glottis* meaning the vocal cords, has been traced to Morgagni (1718). The expression *chorda vocalis* was introduced by Ferriar in 1744. The word vocal cord, *lig. vocale*, seems to have originated in the present century, and is found for the first time in Lischkovic in 1814. The definition by Luschka of the word glottis, given in his monograph on the larynx (Tubingen, 1871, page 48), is very remarkable. Since the two vocal cords together form a tongue-work (*Zungenwerk*), (*Glottis*)

<sup>3</sup> *Archives f. Laryngologie*, I. S. I.

for the production of tones, it is evident that the split between the two cannot be called glottis, but must be separated from the glottis and called rima glottidis.

“After Lauth (1835) had demonstrated the elastic membrane of the larynx and the elastic ligg. threoarytaenoideae as its component parts, a conflict in the use of the names appeared. Some authors used the words vocal cords, or ligg. vocalia, but many only the elastic ligg. thyreoarytaenoidea, whilst others, and among those especially the laryngologists, by the word vocal cord signified the entire lip bounding the glottis. Fränkel, who first called attention to this contradiction, remarks that it might have been better to have an individual name for the entire structure, but he most energetically defends himself against the explanation of the use of the word vocal cord to mean the entire vocal body.

A simplified and uniform naming in this department is absolutely necessary, and the old name of glottis vera and glottis spuria as well as the ponderous name ligg. thyreoarytaenoidea superiora, and many others, must be relentlessly thrown overboard. The names adopted by the commission are:

*Labium vocale*, for the prismatic entire vocal body.

*Plica vocalis*, for the folds of mucous membrane.

*Lig. vocale*, for the elastic band.

*M. vocalis*, for the muscle lying within the labium.

*Glottis*, for the entire apparatus of the voice.

*Rima glottidis*, for the cleft between the vocal cords.

The last two words are used in the same sense as oris, meaning the mouth, and rima oris, meaning the cleft of the mouth. For the false vocal cords of the older anatomists, physicians use the more convenient word pocket band, and accepting this word we have:

*Plica ventricularis*, pocket fold.

*Ligg. ventriculare*, pocket bands.

*M. ventricularis*, pocket fold muscle.

The cleft between the two ventricular folds, the glottis spuria of the old anatomists, since it forms the exit of the vestibule, is called *rima vestibuli*.

In the place of the former *Mm. thyreo-arytaenoidei* of the authors we have adopted:

*M. thyreo-arytaenoideus* . . . *M. vocalis*.

*M. thyreo-arytaenoideus externus* (Henle) *M. thyreo-arytaenoideus*.

*M. thyreo-aryepiglotticus* (Henle) or

*M. thyreo-arytaenoideus superior me-* } *M. ventricularis.*  
*dialis* (Krause)

"*Macula flava* is that part of the anterior end of the *Lig. vocale* in which we find a little elastic nodule, which being seen through the mucous membrane gives the latter a yellowish tint. The nodule consists of an accumulation of elastic tissue which Luschka and Fränkel believe to be a fibro-cartilage. This *macula flava* must not be confounded with the *macula lutea*, which is not recorded at all in our list. This latter name was given to a small piece of articular cartilage which can be seen through the mucous membrane at the posterior end of the *lig. vocale*, covering the end of the *proc. vocalis*, of the *cart. arytaenoidea*, by B. Fränkel.<sup>1</sup>

"*Cartilage cuneiformis* [*Wrisbergi*]. The name of Wrisberg's cartilage has recently been disputed by Fränkel<sup>2</sup>, because the cartilage was previously known to Morgagni and Camper. After the cartilage has borne the name of Wrisberg for so long a time, a rebaptism seems unwise. Fränkel himself proposes to allow the cartilage to retain the name of *cart. cuneiformis*. I refer to the rulings and principles governing the matter of personal names given in the introduction.

"*Lig. cricothyreoideum* [medium] is really no independent ligament, but it is the anterior margin of that structure, designated as *conus elasticus* by some anatomists. The entire *conus* can be demonstrated from without after removing a part of the thyroid cartilage. From the side the *mm. cricoarytaenoideus lateralis* and *thyreoarytaenoideus* are then removed. It now appears as an oblique slanting

<sup>1</sup> *Archiv für Laryngologie*, 1894, Bb. I. S. 14.

<sup>2</sup> Same, Vol. II, Heit. 2.

yellowish membrane which is in connection with the arytaenoid cartilages behind, with the thyroid cartilage in front, and the cricoid cartilage at the bottom. The upper margin of the conus is formed by the lig. vocale.

“Since the entire submucous tissue of the larynx is rich in elastic fibres it was called the *membrana elastica laryngis* by Lauth, Tortul, Luschka, and others. The *conus elasticus* is the under portion of the *membrana elastica*; the upper portion is called *membrana quadrangularis* and is limited by the *Plica aryepiglottica* and the pocket-band (ventricular band). Of these various names the *membrana quadrangularis* and the *conus elasticus* have not been accepted by the commission.

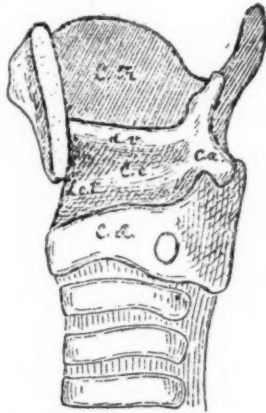


FIG. 2.

*Larynx, with dissection of conus elasticus. The upper margin of the conus elasticus is formed by the lig. vocale, the anterior margin is formed by the lig. cricothyroideum medium. C. th., Cart. thyroidea. C. cr., Cart. cricoidea.*

*C. a., Cart. aryepiglottica. C. e., Conus elasticus.*

*L. v., Lig. vocale. L. c. t., Lig. cricothyroideum medium.*

The explanatory remarks close with the following sentences: Let us now recommend the *Nomina anatomica* to the kind consideration of all interested parties. Even in scientific life and among scientific workers we have a sense of communism, the cultivation of which brings honor and satisfaction to the individual, whilst it lends progress and

prosperity to all. The adoption of the uniform nomenclature at our schools must be understood and carried out as an act of scientific communism."

All those who have contemplated and carefully weighed in their minds the magnificent work which the Anatomical Association has done, in completing this nomenclature, the result of which is a uniform language for our science, will agree with me, when I move you, my colleagues, the adoption of the above nomenclature. It will no doubt be a difficult thing for us laryngologists, to give up the notion of the vocal cord, but the Anatomical Society should not appeal in vain to our sense of scientific communism (singleness of purpose).

We must now decide among ourselves whether we will adopt the nomenclature as it has been presented to us or not; we cannot make a selection of the names from the list. Further discussion is excluded at this time. We are not asked to make a sacrifice of a conviction. We must only give up certain time-honored customs. I have made an attempt to see how it will work. While I have retained the old nomenclature in my clinical lectures, I have accepted the new nomenclature in my course of laryngoscopy during the current semester. I was thus compelled to use the old nomenclature three times a week in my lectures, and the new one twice a week. I found it difficult only in the first few hours, then I received the impression that in many respects the new nomenclature would be preferable; for example, it sounds more natural to speak of vocal-lip-paralysis or of the vocal-lip-closure than if we say vocal-cord-paralysis or vocal-cord-closure. Prof. C. Benda, in his new essay on the "Mucous-membrane-fold of the vocal-lip" (see above, No. XIII) has adopted and used the new nomenclature. The readers may form a judgment of the work by looking up this paper.<sup>1</sup> Aside from the name vocal-lip instead of vocal cord, there is little in the new nomenclature which we would object to. Perhaps it will be a little difficult for us to call the crypts or lacunae

<sup>1</sup> *Archiv. of Laryngology and Rhinology*, Vol. III.

or folliculi of the tonsils fossulae, or to call the hiatus semilunaris, infundibulum ethmoidale and to speak of the sinus maxillaris meaning the antrum of Highmore. There are no difficulties of principle to overcome and the advantages are so great, that we feel that we must make the sacrifice of abandoning some beloved customs. The Laryngological Society of Berlin has accepted the new nomenclature, and although there is no intention of exercising any pressure in this direction, I hope that the representatives of our specialty will accept the new nomenclature.

## A FISH BONE IN THE RIGHT PYRIFORM SPACE.

BY HOWARD S. STRAIGHT, M. D.,  
OF CLEVELAND, OHIO.

IN April, 1895, a woman, 30 years of age, came to my office. She was certain that there was something in her throat. She gave the following history: The day before she was sitting at the table with her two children, codfish was one of the articles of diet. The baby tipped his chair partly over and she sprang to prevent his falling. Just before the child made this movement she had taken a good-sized piece of the fish into her mouth. As she sprang to catch the child she undoubtedly took a quick, deep inspiration. She at once felt a sharp pain in her laryngeal region and she also expectorated a few drops of blood. Since this time until seeing me, twenty hours later, she had had no special symptoms. There was a slight, sharp pain in the right side of her throat upon swallowing and also a sharp pain upon pressure over the right side of the thyroid cartilage. She had slept as well as usual the night before. No blood, not even blood-stained mucus, had been expectorated, except as stated. Her voice was perfectly clear. She had had no dyspnea. While obtaining the history she expectorated a mouthful of clear mucus. Up to this time I had believed that there was no foreign body in her throat in all probability; that she either imagined there was or that she had expectorated or swallowed the offending substance. In a moment or two she again expectorated a mouthful of clear mucus. She said that this expectoration of mucus had commenced shortly after the accident and had continued during her waking hours, although it had caused her no disturbance during the night. I became convinced from this symptom that there was something in the throat, and after spraying the pharynx and larynx with a 40%

solution of cocain I began the search. I could find nothing in the pharynx. A most careful examination of the larynx—with especial scrutiny of the ventricles and pyriform sinuses—revealed nothing. There was no reddening of any portion of the mucous membrane, nor could I detect any abrasion or puncture. While I could detect nothing, the following symptoms: slight expectoration of blood at the time of the accident and the expectoration of the mucus since that time were unusual if the patient was in error as to her diagnosis. Again the search was renewed. My attention was now attracted to a little white point at the extreme inner side of the right pyriform sinus. I pressed lightly against the right side of the thyroid cartilage and the patient complained of a sharp pain in the throat like the prick of a pin. A re-examination of the right pyriform sinus revealed the white body projecting about one-fourth of an inch above the mucous membrane. With an ordinary laryngeal forceps the body was seized and extracted. It proved to be a large fish bone one and three-fourths of an inch long. The symptoms of the patient now required no further explanation.

*Remarks:* This patient formed an exception to the rule. The great majority of patients who present themselves to a throat specialist because they believe that there is something in the throat are mistaken. This is the only case coming under my observation in a number of years in which a foreign body in the larynx was really present, although a large number of patients, in dispensary and private practice, came to me firmly convinced that there was a foreign body in the throat. From my experience in eight years of practice, during which I was chief of a large throat, nose and ear clinic, I infer that foreign bodies in the larynx are comparatively rare. It is not, however, a rare thing to see patients who firmly believe that they have swallowed a hair, a fish bone, a piece of straw, a feather, etc., and it is sticking in the throat. Many of these patients are neurotic. The more they consider such a possibility the more they irritate the throat by swallowing and scraping, and even inserting the finger in search of the foreign body. Such efforts soon produce so much irritation that the patient is more than ever convinced as to the correctness of his diagnosis.

It is surprising how tenaciously such a patient will cling to his opinion. I have often been puzzled to know what method

to adopt to convince such a case of his error. As a rule, I frankly tell such patients that there is no foreign body in the throat. The opinion is often doubted for days or is not accepted at all, and someone else consulted. Patients who have a slight chronic laryngitis and who ordinarily have little or no cough or irritation of the larynx take a fresh cold. The irritation added by the cold often brings such a patient to the specialist because of something sticking in the throat. If the patient has eaten fish within a short time he questions whether he did not at that time swallow one of the fine bones. A few months ago a prominent practitioner who has chronic laryngitis came forty miles to consult me because he thought there was some foreign body in his throat. He had taken a new cold only. If patients with such an idea are hard to convince of their error after a careful examination of the throat by a specialist, it must be a difficult thing for the general practitioner to convince such a case that his fears are needless.

DIAGNOSIS AND TREATMENT OF SUPPURATION  
OF THE ANTRUM WITH HISTORY OF CASES.<sup>1</sup>BY PRICE-BROWN, M. D.,  
OF TORONTO, CANADA.

LARYNGOLOGIST TO THE WESTERN HOSPITAL.

THE diagnosis of antral disease is frequently somewhat obscure, and consequently a positive conclusion can rarely be arrived at upon the first examination. The presence in one nasal cavity of pus of a creamy color and possessing an unpleasantly aromatic odor, while the other nasal cavity is free, is always sufficient to induce the impression that suppurative disease exists in one or another of the accessory sinuses.

The question, however, is, whether the disease is frontal, ethmoidal, antral or sphenoidal? And we must not forget that the muco-purulent discharge produced by the presence of polypi associated with atrophic disease, sometimes simulates the pus of antral suppuration. Foreign bodies and rhinoliths may also give rise to a similar character of discharge.

Cleansing the nostril by mild sprays, and following this by the application of cocain to the mucous membrane will materially aid in diagnosis. Its astringent action on the blood vessels will make the presence or absence of deep polypi certain. The same applies to foreign bodies of whatever character.

Even after this exclusion, to ascertain positively which of the accessory sinuses is the affected one is not always easy; still it is satisfactory to know that the large majority of cases of chronic sinusitis are those of antral origin. Some consider the presence of a drop of creamy pus in the middle meatus, just external to

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<sup>1</sup> Read before the Toronto Medical Society, December 19, 1895.

the lower border of the middle turbinated, of diagnostic value. If the pus is further back and visible in the posterior nares it is likely to be from the diseased sphenoidal. If further forward in the neighborhood of the infundibulum it may arise from the ethmoid cells or frontal sinus, but in both these latter the external orbit may likewise be affected, which is rarely the case in antral disease alone. When the quantity of pus is large, whatever its origin, it may extend to all these locations, and accuracy of diagnosis can only be obtained after thorough cleansing and shrinkage by cocain. Then, by bending the head forward, the exit of the pus from the ostium semilunaris beneath the middle turbinated can often be verified.

In my own experience, however, a serious difficulty arises here. During the last three years I have not had a single case of antral disease which was not complicated with chronic hypertrophy of the middle turbinated; and with one exception, I had good reason to believe that the hypertrophy was the cause and not the effect of the sinusitis. In every case the turbinated was bathed in pus, and the enlarged body so pressed upon the ostium maxillare that it was impossible to find it until I had, by operation, removed a section of the hypertrophic enlargement.

The neuralgias which arise from sinusitis wherever located are not of much diagnostic value. Still there is an uncomfortable feeling, a sensitiveness on pressure, and a tenderness of the affected jaw in closing the teeth during mastication which sometimes arises from antral disease, but not from suppuration of the other sinuses.

Moreau Brown, of Chicago, gives one sign in diagnosis which, in my own experience, has been of little value. He says that after cleansing the pus away by a pledget of cotton, pressure on the facial wall of the maxillary sinus would produce its reappearance. The maxillary bone I have found to be too dense to be influenced by any pressure which it seemed safe to make.

Irrigation is also recommended as an aid in diagnosis. That is by passing the point of an antral catheter attached to a syringe into the ostium and washing out the cavity with tepid water, the pus washed away would indicate the presence of the disease; but it may be remarked, that when the passages are sufficiently open to admit of the introduction of the catheter, the pus can usually be seen issuing from the ostium without the use of the instrument.

Perhaps the greatest aid to diagnosis is that of transillumination introduced by Voltolini. It is of undoubted value, but the amount of weight attached to it by different rhinologists varies very greatly. Gougenheim says that transillumination is often embarrassing. On using it he has found well-marked sub-orbital umbra indicating pus, and upon opening the antrum found none—the darkening being produced by a thickened mucosa. Grant, on the other hand, thinks it may often be useful in a negative way. In several suspicious cases where pus was believed to be present, he found, on transillumination, the translucency so clear and perfect that empyema of the sinus could be positively excluded and operation forbidden.

These are only exceptions, however, and as a rule, the use of the electric lamp in the mouth will produce an umbra of more or less density beneath the lower eyelid in every case of antral disease. Milligan tells us that he uses Voltolini's lamp in every suspected case, and that whenever it failed to produce a light zone beneath the eyelid, and a red and luminous pupil, on opening the antrum, pus had been found.

Greville Macdonald lays great stress on the fact that where we have suppuration with granulation tissue or polypi in the middle meatus we can seldom be sure of the extent or severity of the disease. He says he has frequently seen cases where suppuration of the antrum was supposed to be the whole trouble, but in which it was afterwards proved that the ethmoid cells and the frontal sinus were just as seriously involved; while on the other hand, cases which had long been treated for so-called necrosing ethmoiditis turned out to be overlooked cases of profuse antral suppuration.

There is one other method of diagnosis which has always received a limited amount of favor; that is exploratory puncture either through the inferior meatus or the canine fossa. I have never seen a case requiring its use, and I doubt if it is often really necessary.

For several years I have used transillumination by the electric lamp in the diagnosis of all my cases of antral disease, but I cannot say that the result was sufficiently marked to make the diagnosis positive by it alone in a single case. I have not opened an antrum without finding pus, but still the umbra from transillumination was not marked enough, even with the darkened pupil added, to justify me in operating without the presence of more positive signs.

*Treatment:* Bosworth tells us "the essential features of the treatment of a case of suppurative disease of the antrum consists in opening the cavity for proper drainage, and subsequently its thorough cleansing and disinfection."

In the latter clause all rhinologists agree. In the former they differ widely in their methods of procedure, while they unitedly accept as imperative the removal of any polypi, granulation tissue or hypertrophy of the middle turbinated which might be pressing upon or obstructing the ostium semilunaris.

Then the direct treatment of the suppuration commences and may be conducted in one or another of the following ways:

1. By direct irrigation through the ostium maxillare. Garel of Lyons is the great apostle of this method of treatment. He claims that it can be accomplished in a large majority of cases, and that the antrum can be washed out regularly and completely without any artificial opening whatever. Out of forty-four cases he succeeded by this method in twenty-eight, or sixty-six per cent, and out of these had to resort to other treatment in only six cases. The larger number were cured in a short time. Some of them by only a few days treatment. The fluid used was usually a solution of boracic acid. He uses a Heryng's catheter and inserts it with the point turned downwards between the middle turbinated and the outside wall. Passing the instrument upwards to a position above the ostium he turns the point outwards and gently engages it in the mouth of the cavity. This requires careful manipulation as the point of the catheter is in close proximity to the orbit.

At the first washing the discharge is purulent and fetid, and sometimes, caseous, but before the irrigation is over the fluid returns from the naris perfectly clear. On each succeeding washing the pus decreases in quantity. After a very few washings nothing comes away but a mass of gelatinous mucus-pus, the water itself being quite clear. At each sitting the mass discharged becomes smaller and finally disappears, the patient being cured.

2. By opening through the inferior meatus or Jourdain's method. Of this method Dundas Grant is a strong supporter. He claims that as the antrum communicates with the respiratory passages and not the digestive, the more natural opening will be by the nose. After applying cocain solution, fifteen per cent, to the mucous membrane he uses Krause's trocar and cannula pene-

trating the antrum through the wall of the inferior meatus. Withdrawing the trocar and leaving the cannula in situ, he attaches to it the point of a syringe and washes out the cavity with warm solution of boracic acid, the fluid escaping through the natural opening. After each treatment the cannula is removed. At the next sitting cocain is again applied, the cannula reinserted and the treatment repeated. Grant claims that, although this treatment is somewhat difficult, yet the number of irrigations required being less than by other methods will justify its use.

Ziem, of Dantzic, as late as October of this year, in a paper published in the London *Journal of Laryngology*, criticizes this method very severely. The difficulty of operating in this region, the thickness of the naso-antral wall in many cases, inefficiency in drainage and the impossibility of personal irrigation by the patient are among the points which he emphasizes, and to these might be added the evil effects of a series of successive applications of cocain.

3. By removing a tooth if required, and opening into the antrum through the alveolus. This is Cooper's well-known method, and is warmly supported by such men as Ziem, Harrison, Milligan and Bosworth. When the teeth are sound, Ziem condemns removal and suggests perforating the antrum through the roof of the mouth in close proximity to the teeth, either between the second bicuspid and first molar or between the first and second molars. The fact that the opening into the alveolus or floor of the antrum, and the ostium maxillare are at opposite ends of the one cavity, must be conceded as an advantage for purposes of irrigation while the facility it affords for auto-irrigation should never be lost sight of. To keep the artificial opening clear, various silver and gold tubes have been devised for permanent insertion during the period in which treatment would be required, the tubes to be attached by silver wire to the adjoining teeth, and plugged to prevent the entrance of food into the antrum.

4. Desault's plan of opening the canine fossa appears to be steadily gaining ground. It is claimed that the patient can treat himself equally well in this way as through the alveolus, and that it will frequently prevent the sacrifice of a sound tooth. A tube with plate to fit the adjacent gum can be retained just as well, or even better than in the alveolus, and there is, if anything, less danger of the passage of food into the antrum.

Some operators have gone much further in this direction; and without hesitation chisel away enough of the external antral wall to admit of the insertion of the little finger and thorough digital exploration of the diseased cavity. The antrum is then curetted and washed out and packed with iodoform gauze. This is changed regularly, the cavity being kept open until thorough healing takes place. Still, although revived recently, this plan is not new, for we read of La Morier, as early as 1740, treating a case successfully in this way.

5. The Robertson plan of combining the chiselling of the canine fossa, with the perforation of the inferior meatus in one or two places has many exponents to-day. Scanes Spicer, of London, strongly favors this method as the only one securing thorough and effectual drainage in many of the most difficult cases. He makes a large opening in both the anterior and internal sides of the antrum, and these openings are intended to be permanent. He then irrigates thoroughly with boracic solution and follows this by packing the antrum tightly with creolin gauze. This is left in for forty-eight hours and then removed. No form of tubage or mechanical drainage is used; but the cavity is syringed out thrice daily with the same warm solution. The patient is also directed to blow out the cavity frequently from the mouth to the nose and also from the nose to the mouth. He claims rapid healing by this means and, although the perforations contract, they usually remain permanently open to some slight extent, without producing inconvenience to the patient.

This multitude of methods of treatment of antral disease, all practiced to-day by leading rhinologists, each one preferring his own special plan as the best, while utilizing one or other of the remaining ones in exceptional cases, seems to me to prove that the results are not, on the whole, as satisfactory as we would like them to be. A few cases are cured quickly, all are relieved, but the treatment requires to be carefully, systematically, and persistently followed to obtain a good result. Often the routine has to be changed and more direct efforts applied, and even then a complete cure does not always follow.

As the last four cases taken from my own case book have differed materially from each other both in history and in treatment, I will close by briefly referring to them.

*Case I.* July 27, 1894, Mr. G. L., 25 years of age, lecturer in classics. Operation by drill in the canine fossa for antral disease.

Previous history: Three brothers and mother had died of consumption. I had previously treated him for nasal polypi and hypertrophy of the middle turbinated on the left side, accompanied by a large amount of purulent discharge. The removal of the two former did not produce any material improvement in the latter. I then tried to wash the antrum through the ostium, but the result was imperfect as well as painful; and as the teeth were sound, I concluded to operate, on the date mentioned, in the canine fossa.

After the operation I irrigated the cavity and then plugged with cotton wool until I could get a silver tube made to fit. On the tube a flange cap was attached to the lower side, fitting the gum. This kept the tube from slipping into the antrum, while the upper lip pressing the surface of the flange retained it in position. A plug in the tube itself was never found necessary.

The patient soon learned to irrigate the antrum successfully and regularly. The relief was marked, and the pus for a while diminished materially in quantity; but when winter came on, it increased again. From time to time the drug used was changed, muriate of ammonia, potassium chlorat, peroxide of hydrogen, boracic acid, all being tried, but each failing in turn to suppress the pus formation.

Once during the winter I enlarged the opening slightly and curetted the antrum, putting in a new silver tube in place of the old one. In May, as I was afraid of the development of tuberculosis, I advised the patient to spend the summer in the Northwest. This he did, faithfully following out the treatment during his absence. He returned in September, much improved in weight and general health, but without apparent improvement in the antral disease.

I removed the old tube and again thoroughly curetted the antral lining, and placed in position a new silver tube with a flange at a slightly different angle.

This time I prescribed a solution of resorcin as a wash. The improvement has been very marked. The discharge has greatly decreased, and there is good probability of complete cure, although it is nearly seventeen months since I first opened the antrum.

*Case II.* July, 1894, Miss A., about 50 years of age. Operation by drill in canine fossa of left side.

She had been troubled for several years with left antral and ethmoid disease. The former could be traced to dental caries. To relieve her, a dentist, at the time, had removed all her upper teeth. He told her that she was suffering from disease of the

antrum. Nothing positive, however, was done until she came to me in 1893. I then removed part of the middle turbinated, and by liberating the ostium maxillare from pressure and the use of sprays she was greatly relieved. The discharge materially diminished and at times almost disappeared. It finally got worse again, and she came, as stated, for further treatment in July, 1894.

One reason for operating in canine fossa in this case was the impossibility of an alveolar operation on account of the absence of the teeth. On the first irrigation a considerable amount of pus escaped through the ostium. The solution used was potassium chlorat, blood temperature. At each sitting the amount of pus became less and less. The patient was unable to perform the irrigation personally and came once a day to the office for treatment. In the course of a month, by daily washings, the pus had entirely ceased issuing from the antrum, and in two more weeks the opening was allowed to close. A tube similar to that of No. 1 was used in this case also.

There was still some discharge from the ethmoid cells, of which the patient was relieved by the use of mild sprays.

I saw her again in January of the present year and there had been no return of the antral suppuration.

*Case III.* April, 1895, Miss L. G., 33 years of age, teacher. Several members of her family had died of pulmonary tuberculosis. Has had catarrh of yellowish pus from left nostril for years. On examination, I found enlarged middle turbinated of left side completely filling central part of nasal cavity, and pressing upon the septum as well as the outside wall. The enlarged body was bathed in milky pus of that peculiar odor indicative of antral disease. On transillumination an umbra could be seen beneath the left lower eyelid.

Although antral disease was evidently present, it took some time to sufficiently remove the turbinated to be able to irrigate successfully through the ostium. By June, however, the mucous membrane was pretty well healed, and on the 28th I washed out the antrum through the ostium semilunaris with a warm solution of resorcin. I used an Eustachian catheter with the point bent to a right angle and attached to an ordinary rubber syringe. There was at once a very free discharge of offensive pus of a cream color. The amount of fluid used at the time was nearly a quart. The latter half of it came away quite clear.

June 29. Irrigation repeated. Fluid passed in and out through the ostium freely, but contained less pus.

June 30. This time irrigation required more force. There was very little fluid pus discharged, but a number of small bodies, resembling polypi, were washed out.

July 1. Removed with forceps small slough from anterior

border of ostium maxillare. Washed antrum as before, bringing away some polypoid tissue with very little pus.

After this I irrigated the antrum daily through the ostium with resorcin solution, with a similar result.

July 8. A very large mass was washed out, with absolutely no fluid pus.

This was, in fact, the last discharge from the antrum. Although the cavity was washed out at intervals until the 25th of the month, nothing more came away. The antrum had healed and treatment was discontinued.

Three months later the patient returned as there was again a slight discharge. This, however, seemed to arise from a small angiomatous mass at the ostium, and on its removal, followed by two or three washes, the discharge ceased.

With regard to the practicability of washing the antrum by the natural opening in this case, I may say that I inserted the point of the instrument in the reverse way to the one recommended by Garel. Instead of passing the catheter up to the ostium with the point downwards as advised by him, I found that the best and easiest way was to slip it in with the point upwards until it reached the ostium, and then by turning it gently outwards at an angle of  $90^{\circ}$  it became engaged within the orifice. Several times before inserting it I applied cocain on a pledget of absorbent cotton to the vicinity of the opening. Latterly, however, I did not find it at all necessary to do so.

*Case IV.* June, 1895, Miss B. B., 25 years of age, book-keeper, applied for treatment. For several years she had been troubled with severe nasal discharge from left nostril. On examination the indications were very similar to the others in regard to the condition of the middle turbinated and the presence of pus.

Sometime after reducing the turbinated enlargement I commenced washing the antrum as in Case III, with solution of resorcin through the ostium. This was continued daily and up to August 10th, but although the discharge diminished a good deal, it did not cease, and I decided to open the antrum, this time through the alveolus, to enable the patient to perform personal irrigation.

A dentist removed the first molar, and after applying a fifteen per cent solution of cocain to the socket, I opened a way into the antrum with a burr drill. This, as in the other cases, caused but little pain. I made the opening pretty large, and after washing out the pus, curetted the inner surfaces of the antrum. I did not insert a tube in this case, but directed the patient for some days to insert a pledget of cotton in the opening during meals to prevent the entrance of food. This she soon discontinued as she believed it unnecessary. She, how-

ever, washed out the cavity regularly twice a day with a solution of boracic acid.

For several weeks the opening easily admitted the point of the syringe. Then, on contracting a little too much, it was easily and painlessly enlarged again. I think I only had to enlarge the alveolar opening twice during the three months during which irrigation was required. Latterly, as the pus diminished in quantity, the washings became less frequent; and during the latter half of November the discharge entirely ceased, consequently the alveolar opening was allowed to close. Since then there has been no discharge whatever of pus from the naris.

In closing the history of these cases it may be noted that three out of four or seventy-five per cent were cured, with a fair prospect for the remaining one; and also the unusual fact that they were all cases of left antral disease.

HAY FEVER—A SUCCESSFUL TREATMENT  
FOUNDED ON A NEW THEORY.\*By W. F. STRANGWAYS, M. D.,  
OF FLINT, MICH.

DURING the last eighty years many eminent physicians have proposed many theories to explain and many remedies to cure hay fever. In the hands of the general profession it has been difficult to disprove the theories, but very easy to determine the inefficiency of the cures. Many earnest, able investigators have made cures in their own practice and, with confidence, they have given to us their treatments, but unfortunately where they found much virtue we found none.

Recognizing these facts it is with much diffidence I present this paper; yet I am convinced I am on the right track, and if I fail to give the whole of the true explanation I shall suggest lines of investigation which, in the wider field of the whole profession, will lead to a full solution of this puzzling disease. This conviction, and it alone, has led me to offer my paper this year instead of waiting until time and a much wider experience approved or disapproved it.

To prevent misunderstanding, I wish to say I think the term hay fever is used too promiscuously by many writers. My observation teaches me that there is a difference between hay fever and the coryza, with somewhat similar subjective symptoms produced by many forms of irritation.

Exposures to irritating dust will cause stenosis, sneezing and a watery discharge, which later on becomes muco-purulent.

If we examine the nares we find an inflammatory action, whereas in hay fever it is not inflammatory; it is a vaso-motor

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\* Read before the Detroit Medical and Surgical Association, November 11, 1895.

paresis, and is easily diagnosticated from the inflammatory coryza by the bluish-gray swollen appearance of the inferior turbinates and by the fact that the first train of symptoms continues through to the end.

That you may easily grasp my ideas and follow my reasoning, I shall first state the commonly accepted theory of hay fever, and some of the reasons why I can not accept it. Later I shall give the theory I propose and the reasons for accepting it, with history of but four cases.

The commonly accepted theory is that hay fever is due to the irritation caused by the impact of pollen in the nares of a person of the neurotic habit with some pathologic condition of the upper air passages.

A few authors object to certain parts of this theory, yet the tendency of our whole literature on the subject is, either by inference or direct statement, to support it. I admit that as a rule we have pollen, but I deny that it is the impact of pollen or that it is an irritation caused by it that is the exciting cause.

The various pollens that cause hay fever are very light and never found in comparatively large quantities. The irritation caused by their impact can not be anything like so great as that caused by ordinary dusts, yet hay fever patients can live in clouds of dust without having hay fever. Blakley says that the largest number of pollen grains deposited in one day on his contrivance was 880, and that is, as far as I know, the largest number found by any investigator.

From this we can calculate that rarely do 1000 grains of pollen enter the nares in a day, but one grain for every twenty-five inspirations.

Were there one hundred times as many, their impact could not cause sufficient irritation to excite a coryza. Again, if it were a mechanical irritation it would be hard to explain why rose pollen should cause the disease in one man where ragweed pollen had no evil effect, while his neighbor, uninfluenced by rose pollen, was attacked when exposed to ragweed pollen.

Still further, when hay fever attacks a man he ceases to breathe through the nares on account of the partial or complete stenosis, consequently the pollen is not drawn into the nares; however, the hay fever continues.

Bosworth says the chief pathologic lesions predisposing to hay fever are the obstructive, that is, those lesions which force

the patient to habitually breathe through the mouth when sleeping or taking active exercise. If hay fever were due to the impact of pollen such patients should be less prone to the disease. It is true that this objection is met by the statement that such nares are much more sensitive, hence need far less irritation to produce a coryza. But this counter-statement loses much of its force when we remember we are constantly examining exquisitely sensitive nares where there is no hay fever, although the patients have the neurotic habit and are in an atmosphere laden with pollen.

All its force disappears when we examine the reports of cases treated by the advocates of the sensitive areas and find that the destruction of these sensitive areas cures but a small percentage of cases.

Undoubtedly sensitive areas and obstructive lesions make the patient less able to combat the evil influence of certain pollens, and the cure of these lesions often produces enough change in the circulation, secretions and drainage of the nares to save the sufferers from future attacks. I do not think that these lesions are absolutely necessary, for in over fifty per cent of the cases the attacks continue after we remove all such lesions, while many find their attacks worse after our best rhinologists have done all that modern science commands to restore the nasal chambers to healthy condition.

Disease of the nares tends to cause a sluggish circulation and altered secretions which lessen our power of resistance while it increases the force of attack.

I shall refer to this again in discussing my own theory, and shall now refer to the third link in the commonly accepted theory, "the neurotic habit." This is supposed to be necessary because a few patients are said to have had attacks of hay fever caused by mental impressions, while others have their attacks begin at the same hour of the same day each year. The first is true of almost all diseases where there are no organic changes, and the last is easily understood when we remember that the patients are exposed to daily increasing quantities of pollen before the attack begins.

Up to the hour for attack the inhibitory influence of the mind retards the attack, but when the expected time arrives the very opposite mental influence obtains.

Hay fever may be a neurosis, but I am convinced that the neurotic habit has but little to do as a predisposing cause. Were it otherwise, treatment directed to the cure of this habit would relieve a large percentage of cases, yet we know we can devise no treatment to build up the nervous system which has any material influence on the severity or certainty of return of the attacks. We know that the hyperesthetic neurotic habit is much more common with females, yet more males are subject to hay fever. We also know that only a very small percentage of people with the neurotic habit have hay fever, although they have chronic rhinitis of the obstructive character and are exposed to pollen-laden air.

These are only negative objections, but there is a strong positive one which is that we have many cases of hay fever where we have no neurotic habit. I am sorry I can not state positively how many of the seventeen cases I have treated this fall were free from all neurotic symptoms and history, not only in themselves but, as far as they knew, in their families for three generations. I do know that at least eight were entirely free, while six had no neurotic tendencies that I noted, but my record of their histories is too limited to give a decided opinion. The other three were neurotics.

For ten years or more I have been a victim of hay fever, and if any of you gentlemen still think the neurotic habit is a requisite, when I have finished reading my paper, I shall be glad to have you find a single symptom of such a constitutional tendency in me or the history of it in my children, my ten brothers and sisters, my parents and their fourteen brothers and sisters, or in my grandparents.

A theory against which I can raise so many strong objections is, to say the least, so weak that we may well spend the time necessary to examine one offered in place of it which claims that hay fever is caused by a toxin generated from pollen by a fermentative process in an alkaline solution.

To avoid confusion I state my theory in as few words as possible. It is probable this toxin may be generated from other substances than pollen. In fact, pollen may simply supply the microbe that generates the toxin from substance belonging to the nares of hay fever subjects, and it is quite possible that a few other substances than pollen may convey such a microbe into the nares.

This toxin produces a vaso-motor paresis with disordered secretions and these disordered secretions by irritation cause the paroxysms of sneezing. Some pathologic lesions of the nose predispose to hay fever by causing altered secretions suitable for the fermentative process and by causing a sluggish, poor circulation lessen the normal inhibitory powers. Acid solutions used as douches tend to stop this fermentative process and the free internal administration of muriatic acid renders the system more immune to the toxin, possibly by causing an increased production of certain constituents of the blood, but more probably by lessening the alkalinity of the blood as well as that of the nasal secretions. Pepper is an active irritant of the nasal membrane, whether it touches it by the gentlest contact or most forcible impact, just as mustard irritates the skin.

At first I thought pollen might contain similar irritating properties and began to investigate along that line. I found it very difficult to obtain ragweed pollen in sufficient quantities for experiments, and until I had rendered myself immune to it I dared not handle it, hence my first experiments were with other pollen, especially that of the cucurbitæ. Of the many experiments I made with different pollens I shall refer to only two or three.

In test tubes I placed three solutions—first, one of pure water; second, one with two minims of acetic acid to one ounce of water, and third, one with five grains of bicarbonat of soda to one ounce of water.

On these solutions I dropped pollen. In the solution of pure water and water with acid the pollen sank rapidly, while only a part of the pollen dropped on the alkaline solution sank, and it sank slowly. Around the pollen in the latter solution I noticed a decided grayish exudate form quickly and the yellow color disappear. Around the pollen in the pure water a similar exudate formed in smaller quantities and more slowly, while but little formed in the alkaline solution. Under the microscope I found a small amount of amorphous translucent material that had escaped from the pollen in the alkaline solution. From the pollen in the pure water considerably more was found, while in the acid solution there was a large amount and it was arranged in rods or threads or, as some observers say, mycelium-like bodies. At first thought I thought these might be the minute organisms referred to by Helmholtz as the cause

of hay fever, and that they would indicate a lack of alkaline constituents in the nasal secretions, but many tests indicated as great an alkalinity as normal, if not more.

Then it occurred to me that the rapid exosmosis in the acid solutions might mean a rapid disorganization of the pollen and prevention of its evil influence. This seemed the more probable from three facts: first, that even weak acid solutions stop the movement of spermatazoa which have a similar function to pollen; second, that hay fever is more common in men than women, though woman's blood is less alkaline than man's; third, that for years we had used alkaline solutions in the nares of hay fever patients with little or no benefit.

It seemed quite possible that in pollen there were certain protoplasmic elements which in warm alkaline solutions changed into the toxin causing hay fever, and that acid solutions might prevent this change. On this supposition I washed out the nares of a hay fever patient with 2 minims acetic acid and 4 grains of salt to the ounce of water. It gave him marked relief and continued to do so. For him no other treatment was necessary, but in other cases I found the turbinateds remained swollen in spite of the comfortable effects of the wash.

Between the swollen opposing membranes is an excellent place for fermentation as it gives heat and moisture with blocked drainage. Although the patients could not breathe through the nares pollen was forced into them, for, during oral respiration, pollen is deposited in the oro-pharynx and forced upwards by blowing the nose and the paroxysms of sneezing. It is quite likely that the oro and naso-pharyngeal cavities afford opportunities for the formation of the special toxin. The entrance of pollen in this manner explains the continuance of the malady for weeks after nasal respiration ceases, and it also suggests the necessity for cleansing with an anti-fermentative, the oro and naso-pharyngeal cavities.

Experience with nasal syrays had led me to reject them for hay fever, and, indeed, for most nasal complaints. For some months I have been using Dessar's nasal douche cup and find it much more satisfactory than sprays.

For those cases where the swollen condition continued after using the wash I added  $1\frac{1}{2}$  grains of resorcin to the ounce of the mixture, as it is an excellent anti-fermentative and causes more or less contraction of the coats of the vessels in the turbinateds.

This was so satisfactory that I used it for all cases and obtained either partial or complete relief. Where only partial relief was obtained I attributed it largely to the fact that it is so difficult to reach all parts of the nasal cavities if we have more or less stenosis. This brought up two new points for consideration: first, could we, by internal treatment, render a patient immune to the toxin? Second, should we remove, by surgical means, the obstructive lesions during the attack.

As I stated in an early part of this paper all attempts to build up the system and cure the neurotic habit had given very poor results; yet, if my theory is correct there must be a great deal less resistive force in patients with fairly healthy nares who suffer from hay fever than there is in patients who have no hay fever, though they have serious obstructive lesions of the nares. In our systems we have certain constituents that guard them against the attacks of toxins.

Lately much investigation along this line has greatly advanced preventive medicine, yet we know but a small part of what is to be known, so that we are pardonable if we endeavor to strengthen the defensive forces by well-known remedies without knowing how they act.

The fact that acid douches had a decidedly beneficial influence, suggested the internal administration of acids, and I determined to prescribe hydrochloric acid, giving to each patient from one to two drams daily, according to circumstances. In my own case the acid douche gave complete relief, but if I ceased using it hay fever symptoms would return in about thirty-six hours. Having repeated this experiment three times I decided to stop the nasal douche and try the effects of hydrochloric acid internally. Within twenty-four hours after I commenced using it my hay fever disappeared and a feeling of general well-being ensued, and I became so immune to the influence of ragweed pollen that I was able to carry on my investigation with it instead of the innocent pollens. This free administration of hydrochloric acid was beneficial in every case it was prescribed, and it suggested the possibility of the blood being too alkaline. I made no attempts to determine this by examination of the blood since it is so extremely difficult to determine its exact alkalinity.

I have given considerable attention to the nasal secretions and find that on the average they were more alkaline in my hay

fever patients than in other patients I was treating for nasal difficulties at the same time. I found the degree of alkalinity in obstructive nasal troubles varied much. Mr. D., saloonist, came to me for nasal trouble, I removed from the left nares polypi and some hypertrophied tissue. Four days later when he called I found the secretions in the left nares markedly alkaline while those in the right were neutral but became alkaline after I irritated the right turbinateds to cause a free discharge. A Mrs. W. had slightly acid secretions, but later on when she caught a cold they became alkaline. My study of this part of the subject is entirely too limited to make any conclusions worthy of your consideration.

When I found that two drams of hydrochloric acid a day rendered me immune to ragweed pollen I gathered the plant and spent much time in trying to obtain a fair amount of the pollen for experiments, one of which was to make a number of infusions from it, all of which appeared to be harmless although they were decidedly bitter and of a yellowish-brown color. I dropped them into the eye and applied them to the turbinateds of hay fever patients without any immediate effects or the tendency to cause an earlier return of the hay fever although I discontinued the acid treatment.

Another experiment was to snuff up the pollen and in an hour wash it out with acid solutions. Although a hay fever subject, I did this with impunity save for a slight irritation which lasted but a few moments, and was similar to what nearly all powders caused in my nares. I selected an hour as the length of time to elapse before I washed it out, as in that time any irritant action would be exerted and there would not be time for the formation of the toxin.

I may say I could not obtain the pollen in quantities free from other parts of the flower, but by frequent microscopical examinations I was convinced over thirty per cent by volume was pollen. These two experiments led me to conclude that hay fever was not due to irritating or paralyzing properties existing in pollen as it enters the nares, and I was forced to accept the idea that a toxin was produced by fermentative changes. This view was well sustained by the acid treatment. I tried to eliminate all psychical influences as will appear in the few cases I give:

*Case I.* E. Mc., 16 years of age, robust, healthy lad free from any neurotic history. A year ago complained of nasal stenosis, sneezing and watery discharge. Consulted me last spring. I found right septal exostosis, turgescence of inferior turbinated and adenoids. I removed turgescence by galvano-cautery and adenoids with curette. During the summer he had no trouble, but on September 16th he consulted me for a mild attack of hay fever which he thought was a return of his catarrhal trouble. Wishing to avoid psychical influences I told him I should give him a wash and commence active treatment later on. I prescribed the acid wash and on September 20th he reported decided relief, but all the trouble had not disappeared. I continued the douche and gave internally hydrochloric acid one dram a day.

September 24. He reported himself cured but continued the treatment giving only half the first amount of the acid.

*Case II.* R. P., 20 years of age, a strong, healthy farmer with a hay fever history running over four or five years. Consulted me October 12, 1894. Found left septal exostosis, hypertrophy of the turbinateds and adenoids. Removed exostosis with saw, hypertrophies with cold wire snare and adenoids with curette. From December until August he reported his nasal trouble cured.

August 29. He reported as bad as ever stenosis, watery discharge and sneezing. Rhinoscopic examination revealed a typical case of hay fever so I gave him the acid douche.

September 6. He reported he was much better and would be all right if he could use his douche every hour. Continued douche and prescribed internally hydrochloric acid.

September 13. He reported all trouble had disappeared within forty-eight hours of the time he commenced taking the medicine.

October 26. Has had no hay fever since. There was considerable turgescence of right inferior turbinated, and though he claimed it caused him no trouble, I cauterized it.

I report this case because his hay fever was worse after almost all pathologic lesions of nares had been removed, and because he is an unusually robust man with nothing in his own or his family history to indicate a neurotic habit.

*Case III.* F. B., 39 years of age; no neurotic history but typical attacks of hay fever for ten years.

Septemaer 8. Gave acid douche.

September 11. He returned saying hay fever was cured. Stopped douche, and on September 14th he reported hay fever had returned. Gave him hydrochloric acid 10 minims every three hours, and after the second day only three times a day; relief was complete.

*Case IV.* Miss N. M., 14 years of age, farmer's daughter, strong and well all the year save from early in August until the first frost. No history of neurotic trouble either in herself or family. Consulted me August 17th. I found the nares occluded with swollen and hypertrophied turbinates. Her attacks were so severe that she was forced to go north for the four preceding years, yet she denied having any nasal trouble during the rest of the year. Used cocain and with the cold wire snare removed hypertrophies. Gave Dobell's solution for a wash with syrup of hypophosphites internally.

August 21. Was but little better save that her asthma was not so severe. Snared off a little hypertrophied tissue that had escaped my wire at the first operation and continued Dobell's solution and the hypophosphites.

August 26. Asthmatic symptoms had disappeared entirely, but the sneezing, stenosis and watery discharge continued. I washed out nares and naso-pharynx with acid wash, and patient asked me if I could give her the same wash as it was far better than the one she had at home, that it made her head feel ever so much better. I gave it to her and prescribed hydrochloric acid 10 minims, six times a day.

From that time on she had no hay fever. I held out no hope of relief for this year until she reported her hay fever gone. I wished to avoid all psychical influences and did not give her the acid treatment until surgery and Dobell's solution failed.

I think the acid treatment would have failed in this case had I not removed the hypertrophies, for while they remained it would have been impossible to get the anti-fermentative wash to reach more than a limited part of the cavities, while the sluggish circulation caused by such lesions handicapped the powers of those constituents of our economy which resist the attacks of toxins.

I place stress on the imperfect circulation, for if it be true that hay fever is due to a toxin, we must strive to obtain a healthy circulation in the turbinates to resist the evil influence of it. We all know that many cases of hay fever are cured by removing obstructive lesions, and if the theory I advance is correct it is easy to understand why such cures should occur because we improve the drainage causing the pollen and its products to be cast out; we change the secretions back to normal, lessening the tendency to fermentation, and we improve the circulation so that it has a much greater power for resisting the attacks of the toxin.

I resort to surgical treatment during the attacks since I have employed the acid treatment and I find very little reaction.

I may say I believe much of the reaction experienced by some is due to lack of thoroughness. If I use the snare I endeavor to remove every bit of the hypertrophy attacked, and if I use the galvano-cautery I burn deeply enough to cut through the venous sinuses. To cauterize lightly irritates severely without cutting off much of the circulation. Thorough cauterizing causes no more irritation and tends to prevent engorgement, consequently, causes less reaction.

I have used the acid treatment only since the latter part of August and have treated in that time only seventeen cases. Of these cases, four needed only the douche and in six I resorted to surgical treatment as well as the acid treatment. Thirteen reported complete relief, one did not make any report, two got complete relief while using the douche but thought it was due to an infusion of snake-root which they were taking at the same time, and the other one refused to take the hydrochloric acid or to allow me to use surgical means which were strongly indicated, as some vender of secret nostrums for hay fever advised him to not do so; still he says the douche did benefit him very much.

In a few cases for the douche I used other acids than acetic, especially hydrochloric and citric, but my experience with them is too limited to determine their advantages and disadvantages.

ABSTRACTS FROM CURRENT RHINOLOGIC AND  
LARYNGOLOGIC LITERATURE.

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THE REMOVAL OF A NASAL POLYPUS IN A CASE OF  
EMPYEMA OF THE ANTRUM OF HIGHMORE  
FOLLOWED BY FATAL MENINGITIS.

Dr. Rayser (*Ibid*) also reports a case of a coachman, 19 years of age, suffering from nasal obstruction and abundant secretion from the right side in the upper part of whose nasal passage a large mucous polypus was found. The polypus was removed with the cold snare, the operation being followed by an abundant discharge which gave rise to the suspicion that a cyst had been opened. During the following days several smaller polypi were removed disclosing a mass of pus in the upper half of the nostril. A week later there developed suddenly rigors and high fever, and the next day marked meningeal symptoms, the patient dying four days afterwards. The autopsy showed purulent meningitis, empyema of the left antrum of Highmore, and a passage large enough to admit a probe from the cranial cavity through the cribriform plate to the nasal cavity.

Dr. Rayser thinks that he is justified in the supposition that in this case there was an extension of the dura mater (meningo-

cele) into the nostril. When the polypus was snared a communication was established between the cranial cavity and the nose, and along this passage the infective material from the maxillary sinus found its way causing the development of meningitis.

Although this is a rare case, still its occurrence shows the necessity of exercising great care in these operations. Where the accessory sinuses are diseased, these should be opened and drained before any operative procedure in the nose is undertaken which would otherwise be infected by the fetid secretion.

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SIMPLE MANNER OF OVERCOMING THE CATARRH FOLLOWING THE ADMINISTRATION OF IODID OF POTASH.

From his success in three cases Dr. Cohen (*The Lancet*) advises that, in cases in which there is coryza from the use of iodid of potash, tincture of belladonna be used, 5 minims being added to each dose of the potash.

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QUININ PROPHYLACTIC AGAINST INFLUENZA.

In order to substantiate the experiments of Dr. J. G. Sinclair, Dr. Graser reports (*Deutsche Medizinal-Zeitung*, November, 1895,) the result of Surgeon General Coler's experiments in the German army during an epidemic of influenza.

Each soldier of one squadron received for twenty-two days 0.5 grammes of muriate of quinin in 15 grammes of whiskey. While in four other squadrons there was an average of thirty affected with the influenza, in the second squadron, in which the men had been given the quinin, only seven were affected, three of these becoming sick on the first day and before the medicine could become effective. After the conclusion of the experiment no more of this squadron became affected with the influenza, while among the men of the other squadron there were continually new cases. From this experience Dr. Graser concludes that quinin acts specifically against influenza if taken at the proper time and in the proper dose.

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NECROSIS OF THE MIDDLE TURBINATE.

Dr. A. B. Thrasher (*New York Medical Journal*, December, 1895,) agrees with Bosworth that of all the nasal accessory

cavities the ethmoidal cells are most frequently the seat of disease. Most rhinologists will corroborate this assertion to-day, but a few years ago no one would have believed the statement.

The frequency of disease is partly accounted for on anatomical grounds. The middle turbinal is situated in the apex of the nares, hemmed in on both sides by bony walls, giving little room for inflammatory swelling, and causing great pressure when swollen. In acute rhinitis the inferior turbinal is most frequently inflamed, but when the middle turbinal is affected there is great pressure on the adjacent wall, and the openings of the antrum, the frontal and sphenoidal sinuses, and the anterior and post-ethmoidal cells are easily closed, thus causing retention of normal secretion which may lead to purulent inflammation.

While ethmoiditis is comparatively frequent, necrosis of the bone is rare. Zuckerkandl has never seen a case, and Woakes, in spite of his statement that necrosis is present, as a rule, in ethmoiditis shows only two of his twenty cases to have been affected in this manner. Woakes claims that polypi are caused by necrosing ethmoiditis, but Bosworth, on the other hand, thinks that the pressure of polypi is a frequent cause of ethmoiditis; there is probably truth in both of these suppositions.

The symptoms of necrosis are pain of the intra or supra-orbital nerve, a nasal discharge which is sometimes very unpleasant, obstruction to nasal breathing, anosmia and obstruction of the natural opening of the accessory cavities giving rise to symptoms characteristic of each. The treatment in simple cases consists of alkalin sprays with superficial or deep incisions. When a case is of long standing, and especially when there is osteitis or necrosed bones, the treatment should be radical, the diseased parts being removed with the snare, toothed-scissors or drill.

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#### THE VALUE OF SHARP CURETTES IN THE REMOVAL OF SEPTAL PROJECTIONS.

Dr. Hanan H. Loeb, (*Journal of the Am. Med. Ass'n.*, January 4, 1896,) after reviewing the various mechanical appliances which have been advocated for removing projections of the nasal septum describes a number of currettes which have

been made for him by A. S. Aloe Company, St. Louis, which he has successfully used in these operations. He does not consider the preliminary turning up of the mucous membrane necessary, as the scabbing which sometimes follows septal operations seem to be more dependent upon the lack of smoothness of this surface after operation than upon the cincident removal of the mucous membrane.

The amount of hemorrhage that occurs after the use of this curette does not differ from that occasioned by any other instrument for similar purposes.

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#### A CYST OF THE NASO-PHARYNX AND A CYST OF THE ORO-PHARYNX.

Dr. Jonathan Wright (*New York Medical Journal*, December 7, 1895) calls attention to a paper published by Thornwald ten years ago, in which he claims that sinuses in the naso-pharyngeal mucous membrane, are frequently the seat of chronic inflammation, and are the origin of the symptoms ascribed to post-nasal catarrh. That the "pharyngeal-bursa" is a normal structure in the naso-pharynx, and that naso-pharyngeal cysts are very common.

Although great credit is due to Thornwald for calling attention to these conditions, still the paper has fallen into discredit on account of its many inaccuracies.

In the first place, sinuses in the naso mucous membrane, are not very common, and naso-pharyngeal cysts are rare; most cases of naso-pharyngeal catarrh have for their lesion neither cysts nor sinuses, and "pharyngeal-bursa" are not normal and anatomical structures, but the result of chronic inflammation. The formation of the bursa and of the cysts and sinuses, when occurring, is due to the fact that the folds and projections of the mucous membrane of the naso pharynx, of infancy and adolescence, become agglutinated at their edges, or on contiguous sides, thus forming sinuses and closed cavities, which are favorable to the production and discharge of muco pus. In cases of retention, the walled in space dilates to the proportion of a cyst.

Dr. Wright relates two cases, one of a small cyst of the naso-pharynx, which was probably a dilated lymphatic space, and also a cyst of the oro-pharynx, both of which were removed by the cutting forceps.

PRELIMINARY TRACHEOTOMY AND TAMPONADE OF THE  
PHARYNX AND ADITUS LARYNGIS FOR OPERA-  
TIONS IN THE ORAL CAVITY.

Von Bloch (*Hospitals Tidende, Deut. Med. Zeit.*) has used the Trendelenburg's method of operating since 1886, and with excellent results. The operations for which this method is indicated, are resections of the superior maxilla, removal of large tumors from the naso-pharynx, etc.

After the patient has been chloroformed, tracheotomy is performed, and a large cannula inserted. The chloroform inhalation is now continued through the cannula, and the aditus laryngis and pharynx tamponed with iodoform gauze. For this purpose the author uses a strip of gauze 10 to 12 *cm.* wide and 125 *cm.* long, which he packs firmly, but without violence. The real operation is now commenced. When this is completed the wound is disinfected and tamponed, and the gauze in the pharynx removed.

After the mucus collected in the throat has been removed the cannula is removed from the trachea and the wound may be left as it is or, as the author prefers, several approximating stitches may be inserted. As a rule the wound from the tracheotomy heals without complications.

The above method has been successfully used for several years, but the method of anesthetizing by means of a rubber tube passed through the nostril into the oro-pharynx, as recently introduced by Dr. Souchon, of New Orleans (*Med. News*, November 23, 1895), has made this additional operation unnecessary in many operations about the mouth and face. Dr. Seiler also claims (*Maryland Med. Journal*, November, 1895) that his *ventral position* for operating in these cases will obviate the necessity of a preliminary tracheotomy.

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LEGISLATION VERSUS INDISCRIMINATE EXPECTORATION.

Dr. Wm. G. Bissell, bacteriologist of the Department of Health, Buffalo, N. Y. (*New York Medical Journal*, December, 1895) after reviewing the discovery of the bacillus of tuberculosis and its importance in the prophylaxis of tuberculosis, calls attention to the necessity of legislation to prevent indiscriminate expectoration in public places.

Tuberculosis is a communicable disease, a frequent cause being the inhalation of tubercular material from dried expecto-

tations. The floors of street cars are the common receptacles for expectoration, and with a view of testing the infectious character of this sputum, fifty-six microscopical examinations were made of selected samples from the floors of street cars, and four of these examinations revealed the presence of the germ of consumption. From the enormous number of people who frequent street cars, we can easily appreciate that a considerable amount of dried expectoration must necessarily be inhaled.

The contamination of street cars, as well as of theaters, churches and public buildings can be prevented, and that principally in two ways:

1. By educating the public in general as to the danger of indiscriminate and careless expectoration.
2. By the passage of a city ordinance prohibiting the expectorating on the floors of cars, public buildings and similar places.

Dr. Bissell's article is on a subject of wide hygienic importance. As the boards of health are now recognizing the importance of preventative methods in diphtheria, scarlatina and other infectious diseases, we trust the day is not far distant when the subject will receive the attention it deserves, and that the filthy and dangerous habit of promiscuous expectoration will be a violation not only of a hygienic law, but also of a city ordinance.

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#### INFLUENCE OF ODORS ON THE VOICE.

Dr. Joal calls attention to the many cases recorded in medical literature of severe headaches, nervous disturbances and even occasional cases of death, due to the inhalation of the odors of various flowers (*Revue de Laryngologie*). He then states that a number of singers and actors suffer from this, and that usually it is a certain odor which the affected person cannot tolerate. The symptoms set up are usually coryza, hoarseness even to aphonia, headaches, etc. He reports a number of cases, in several of which good results were obtained by cauterization of the hypertrophied mucous membrane.

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#### SYPHILIS OF THE MOUTH.

In a communication read before the Southern California Odontological Society (*Southern Cal. Prac.*), Dr. Granville

MacGowan points out the importance of promptly recognizing any appearance of syphilis as a self-protection against contagion, and the avoidance of the exposure of his patients to infection, by the use of instruments or dressings.

There are certain lesions which are well marked and distinct, and which, when present, always indicate syphilis. It is important to remember that this infection is frequently non-venereal, and innocently acquired; the victim is frequently unaware of the character of his malady. There are certain cardinal characteristics of syphilis. When occurring upon the skin or mucous membrane, the syphilides are sharply defined, dense and uniform cellular infiltrations of the papillary body and the corium, and differ one from another only in size. The cells are not fitted to undergo permanent organization into connective tissue, but always undergo involution, and disappear by absorption or by purulent degeneration. The syphilitic infiltration always enlarges and disappears in the same direction, centrifugally, hence the peripheral parts are relatively the most recent, and exhibit all the characteristics of the fresh infiltration.

The chancre, when formed in this region, occurs most frequently upon the lips, as an abrasion is not unusual here. Any sore with scant secretion, painless, or moderately so, with a circumscribed indurated base, refusing to heal for weeks, and becoming finally covered with grayish pseudo-membraneous patches, is a chancre. Although usually single, it may be multiple from a simultaneous infection. Within the mouth, the most frequent location is the anterior part of the tongue, the tonsils, or the inner surface of the cheek. The diagnosis is more difficult here, as the distinctive characteristics are modified. If a single and insensitive ulcer or fissure upon the anterior surface, persisting for weeks, refusing to heal under application of nitrat of silver, extends continually, develops an indurated base and becomes covered with a pseudo-diphtheretic membrane, it is probably a chancre. An ulcer may develop from a ragged tooth, and is cured by the removal of the cause.

Secondary lesions of syphilis are not so common in the mouth, when proper attention to cleanliness in this region is taken. The changes observed are due to vascular dilation, infiltration of embryonic cells and the fibronous exudates loaded with young cells, and pus corpuscles. The parts most prone to mucus patches are the inner surface of the lips and the angles

of the mouth. If syphilitic infection is suspected, examine the comisures and glosso-tonsillary folds for mucus patches. This lesion is nearly painless, tends to disappear spontaneously, but to recur indefinitely, and has the modified cercinate forms seen in syphilis elsewhere.

Tertiary syphilis may affect any of the structures entering into the formation of the mouth, but is found most frequently upon the tongue and soft palate, and here it sometimes makes its worst ravages. It may be superficial, but sometimes causes fearful deformities. A gumma is a circumscribed new growth, due to the infection with the virus of syphilis, and consists of small cells closely packed in the anatomical tissues, and present no capability of organization into connective tissue, but tend rapidly, when uninfluenced by treatment, to death disintegration and the formation of excavating ulcers. The ulceration of the soft palate is sometimes very rapid, and to avoid the distressing condition following the invasion of this part, prompt and vigorous treatment is indicated. In all these syphilitic conditions, the treatment should be both local and constitutional.

## BOOK NOTICES.

MICRO-ORGANISMS IN THE HEALTHY NOSE. By St. Clair Thomson, M. D., M. R. C. P., and R. T. Hewlett, M. D., M. R. C. P., London, Royal Medical and Chirurgical Society. H. K. Lewis, 1895.

The authors review the researches which have been made upon the bacteria of the nasal mucus, and they assert that while much has been written upon the bacteria of abnormal conditions of the nose, little has been published upon the bacteria of the healthy nasal mucus. Many writers had promulgated the view that the nose is a septic depository, but the painstaking investigations of the authors proved this to be wholly untrue. They discovered that the vestibule of the nose which is really lined with skin, and the vibrissæ, which are found in the vestibule are abundantly supplied with germs. On the other hand the nasal mucus which is found posterior to the vestibule is almost invariably sterile.

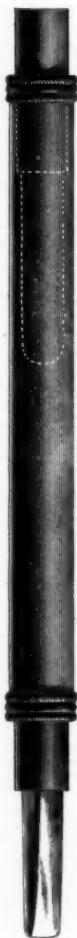
A detailed statement of the experiments made, with method and results accompanies the monograph.

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